



# **Tutorial Letter 101/0/2023**

## **Introduction to Environmental Education**

### **IED1501**

#### **Year Module**

**Department of Science and Technology  
Education**

This tutorial letter contains important information  
about your module.

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Dear Student

As part of this tutorial letter, we wish to inform you that Unisa has implemented a transformation charter based on five pillars and eight dimensions. In response to this charter, we have also placed curriculum transformation high on the agenda. For your information, curriculum transformation includes the following pillars: student-centred scholarship, the pedagogical renewal of teaching and assessment practices, the scholarship of teaching and learning, and the infusion of African epistemologies and philosophies. These pillars and their principles will be integrated at both the programme and module levels as a phased-in approach. You will notice the implementation thereof in your modules, and we encourage you to fully embrace these changes during your studies at Unisa.

## 1 INTRODUCTION

We heartily welcome you to the module, ***Introduction to Environmental Education (IED1501)***. We trust that you will find this module interesting, enjoyable, worthwhile, and enriching, and that this course will be particularly meaningful to you. We hope that it will enable you to learn more about the environment and its challenges and ways in which you could contribute towards ameliorating those challenges. We are very glad to have you as a student in the Department of Science and Technology Education.

Unisa, as a comprehensive open distance e-learning institution (CODEL), is moving towards becoming a fully online institution. You will therefore see that all your study material, assessments and engagements with your lecturer and fellow students will take place online. This tutorial letter is intended to offer you some guidance in this regard.

This tutorial letter is very important because it contains vital information to help you navigate your academic journey. Please study it very carefully before you start on any work for this module to get an overview of what is required of you. Underline all the dates we give you in this tutorial letter and enter them on your year planner where you can see them at a glance. Keep it in a file or some other safe place because you will need to refer to it often during the year. Make sure that it is easily accessible as you will have to refer to it from time to time when working through the study material, preparing the assignments, and addressing questions to your lecturers.

In this tutorial letter, you will find the assignments and assessment criteria as well as instructions on the preparation and submission of the assignments. It also provides all the information you need with regard to the prescribed study material. Please study this

information carefully and make sure that you the prescribed material and familiarise yourself with it as soon as possible.

Therefore, a tutorial letter is our way of communication with you about teaching, learning and assessment. Apart from the tutorial letter, we also make use of the myUnisa platform to interact with you. Therefore, you need to visit the myUnisa platform regularly so that you do not miss out on the information and announcements concerning the module. The website for this module is **IED1501** and you can access it by logging into myUnisa using a username and password.

**Please take note that this is a year module, which means it will run from February/March to November/December. Regarding the study material, please take note that the following sources are prescribed for this module:**

- Tutorial Letter 101 (Prescribed assignments which will be made available to you via the Unisa website and/or another tutorial letter, and the addendum of this tutorial letter contains excerpts from literature which **MUST** be read when completing certain assignments.)
- The study guide which is also provided by the University

## **2 PURPOSE AND OUTCOMES**

### **2.1 Purpose**

The main aim of this module is to provide you with a basic working knowledge and an understanding of the concept of “environment”, the challenges affecting the environment and the role of environmental education in addressing them. We hope that this module will empower you to have a positive influence on the attitudes of people and communities, and to support them to become environmentally literate and responsible.

### **2.2 Outcomes**

The following learning outcomes and assessment criteria apply to this module:

#### **Learning outcome 1:**

The student should be able to demonstrate an understanding of the concept of “environment”.

#### *Assessment criteria*

This should be discernible from the student’s ability to:

1. Discuss the concept of environment and related terms.

2. Provide a holistic view of the concept of environment.
3. Define the concept of environmental crises and reflect on its various forms.
4. Define the concept of environmental education (EE).
5. Discuss the concept of EE by focusing on its origin, evolution and the interface between EE and education for sustainable development (ESD).
6. Locate the position of EE in the South African school curriculum by identifying the themes that could facilitate the implementation of EE in a school setting.

### **Learning outcome 2:**

The student should be able to demonstrate an understanding of a number of environmental issues globally, in the African continent and in Southern Africa.

#### *Assessment criteria:*

This should be noticeable from the ability to:

1. Define the concept of environmental issue(s).
2. Identify and define various environmental issues and locate their context.
3. Suggest viable solutions to various environmental challenges.

### **Learning outcome 3**

Students should be able to demonstrate the ability to apply the notion of education *about*, *in* and *for* the environment in pedagogy.

#### *Assessment criteria:*

This should be evident from the ability to:

1. Apply the notion of education *about*, *in* and *for* the environment.
2. Demonstrate knowledge of various methods related to learning and teaching *about*, *in* and *for* the environment.

These outcomes can be achieved by reading the study guide and other relevant scholarly sources.

| STUDY UNIT | TOPIC                                             |
|------------|---------------------------------------------------|
| 1          | The nature and purpose of environmental education |

|          |                                                                                                                                                                            |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2</b> | <b>Environmental issues</b>                                                                                                                                                |
| <b>3</b> | <b>Active learning <i>about, in and for</i> the environment: exploring various teaching and learning strategies to plan and execute environmental education activities</b> |

All study units are important and in order to benefit from this programme, you need to study the content of all the study units and complete the accompanying activities. This will not only help you in accomplishing the desired learning outcomes, but it will also help you prepare for the assignments.

### **3 CURRICULUM TRANSFORMATION**

Unisa has implemented a transformation charter, in terms of which the university has placed curriculum transformation high on the teaching and learning agenda. Curriculum transformation includes student-centred scholarship, the pedagogical renewal of teaching and assessment practices, the scholarship of teaching and learning, and the infusion of African epistemologies and philosophies. All of these will be phased in at both programme and module levels, and as a result of this you will notice a marked change in the teaching and learning strategy implemented by Unisa, together with the way in which the content is conceptualised in your modules. We encourage you to embrace these changes during your studies at Unisa in a responsive way within the framework of transformation.

### **4 LECTURER(S) AND CONTACT DETAILS**

#### **4.1 Lecturer(s)**

The following lectures are responsible for this module. All enquiries about academic matters in respect of this module should be directed to the primary lecturer. However, you are also welcome to contact either of the two lectures responsible for the module by letter, telephone, e-mail or on myUnisa. Please use the following particulars:

|                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary lecturer: Dr Headman Hebe<br>Telephone number: +27 12 429 2234<br>E-mail: hebehn@unisa.ac.za<br>Online address: <a href="http://myUnisa.ac.za">http://myUnisa.ac.za</a><br>Office number: NS Radipere Building, 07-15,<br>Muckleneuk Campus | Secondary lecturer: Prof Soul Shava<br>Telephone number: +27 12 429 4782<br>E-mail: shavas@unisa.ac.za<br>Online address: <a href="http://myUnisa.ac.za">http://myUnisa.ac.za</a><br>Office number: NS Radipere Building, 07-37,<br>Muckleneuk Campus |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 4.2 Department

This module is presented by the Department of Science and Technology Education. Please contact us, your lecturers, directly by using the contact details provided above.

## 4.3 University

Contact addresses of the various administrative departments appear on the Unisa website: <http://www.unisa.ac.za/sites/corporate/default/Contact-us/Student-enquiries>.

**Please include the student number in all correspondence.**

# 5 RESOURCES

## 5.1 Prescribed book(s)

There is no prescribed book in this module.

## 5.2 Recommended book(s)

Loubser, C.P. 2014. *Environmental education and education for sustainability: some South African perspectives*. 2nd edition. Pretoria: Van Schaik Publishers.

**ISBN:** 978 0 627 03016 1

The book is also available as an e-book and the ISBN for the e-book is: 9780627031892.

Reddy, C. (ed.) 2020. *Environmental education: Principles and guidelines for teachers*. Cape Town: Juta & Co. **ISBN:** 978 1 48510 373 8

## 5.3 Electronic reserves (e-reserves)

There are no e-reserves for this module.

The Unisa library offers a range of information services and resources:

- For brief information, go to <https://www.unisa.ac.za/library/libatglance>
- For more detailed library information, go to <http://www.unisa.ac.za/sites/corporate/default/Library>
- For research support and services (e.g. the services offered by personal librarians and the request a literature search service offered by the information search librarians), go to <http://www.unisa.ac.za/sites/corporate/default/Library/Library-services/Research-support>
- For library training for undergraduate students, go to <https://www.unisa.ac.za/sites/corporate/default/Library/Library-services/Training>

The library has created numerous library guides, available at <http://libguides.unisa.ac.za>

Recommended guides:

- Request and find library material/download recommended material:  
<http://libguides.unisa.ac.za/request/request>
- Postgraduate information services: <http://libguides.unisa.ac.za/request/postgrad>
- Finding and using library resources and tools:  
[http://libguides.unisa.ac.za/Research\\_skills](http://libguides.unisa.ac.za/Research_skills)
- Frequently asked questions about the library:  
<http://libguides.unisa.ac.za/ask>
- Services to students living with disabilities:  
<http://libguides.unisa.ac.za/disability>
- A–Z of library databases:  
<https://libguides.unisa.ac.za/az.php>
- Important contact information:
- Ask a librarian: <https://libguides.unisa.ac.za/ask>
- Technical problems encountered in accessing library online services:  
[Lib-help@unisa.ac.za](mailto:Lib-help@unisa.ac.za)
- General library-related queries: [Library-enquiries@unisa.ac.za](mailto:Library-enquiries@unisa.ac.za)
- Queries related to library fines and payments: [Library-fines@unisa.ac.za](mailto:Library-fines@unisa.ac.za)
- Social media channels: Facebook: UnisaLibrary and Twitter: @UnisaLibrary

## 6 STUDENT SUPPORT SERVICES

The *Study @ Unisa* brochure is available on myUnisa: [www.unisa.ac.za/brochures/studies](http://www.unisa.ac.za/brochures/studies)

This brochure contains important information and guidelines for successful studies through Unisa.

If you need assistance with regard to the myModules system, you are welcome to use the following contact details:

- Toll-free landline: 0800 00 1870 (Select option 07 for myModules)
- E-mail: [mymodules22@unisa.ac.za](mailto:mymodules22@unisa.ac.za) or [myUnisaHelp@unisa.ac.za](mailto:myUnisaHelp@unisa.ac.za)

You can access and view short videos on topics such as how to view your calendar, how to access module content, how to view announcements for modules, how to submit assessment and how to participate in forum activities via the following link: <https://dtls-ga.unisa.ac.za/course/view.php?id=32130>

Registered Unisa students get a free myLife e-mail account. Important information, notices and updates are sent exclusively to this account. Please note that it can take up to 24 hours for your account to be activated after you have claimed it. Please do this immediately after registering at Unisa, by following this link: [myLifeHelp@unisa.ac.za](mailto:myLifeHelp@unisa.ac.za)

Your myLife account is the **only** e-mail account recognised by Unisa for official correspondence with the university and will remain the official primary e-mail address on record at Unisa. You remain responsible for the management of this e-mail account.  
<mailto:>

## 6.1 The Unisa First-Year Experience Programme

Many students find the transition from school education to tertiary education stressful. This is also true in the case of students enrolling at Unisa for the first time. Unisa is a dedicated open distance and e-learning institution, and it is very different from face-to-face/contact institutions. It is a mega university, and all our programmes are offered through either blended learning or fully online learning. It is for this reason that we thought it necessary to offer first-time students additional/extended support to help them seamlessly navigate the Unisa teaching and learning journey with little difficulty and few barriers. We therefore offer a specialised student support programme to students enrolling at Unisa for the first time – this is Unisa’s First-Year Experience (FYE) Programme, designed to provide you with prompt and helpful information about services that the institution offers and how you can access information. The following FYE services are currently offered:

- FYE website: All the guides and resources you need in order to navigate through your first year at Unisa can be accessed using the following link: [www.unisa.ac.za/FYE](http://www.unisa.ac.za/FYE)
- FYE e-mails: You will receive regular e-mails to help you stay focused and motivated.
- FYE broadcasts: You will receive e-mails with links to broadcasts on various topics related to your first-year studies (e.g., videos on how to submit assessments online).
- FYE mailbox: For assistance with queries related to your first year of study, send an e-mail to [fye@unisa.ac.za](mailto:fye@unisa.ac.za).

## 7 STUDY PLAN

Most Unisa students work full-time and can only study after work. As a university student, you should be aware of the importance of working in accordance with a sensible study programme that allows you to be in constant touch with your study material for the next few months.

Your study programme should make provision for the following:

- Orientation regarding the contents of the module and compilation of a work programme
- Working through the study guide, tutorial letters and any other relevant sources
- Completion of activities and assignments and submission of assignments
- Revision of study material previously learned

Please refer to *Study @ Unisa* for general time management and planning skills. The planning schedule below is provided as a guideline only. You should adapt this schedule to suit your personal circumstances.

### Typical schedule for this module

| Period                      | Task                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>January and February</b> | <p>Check the study material you received from Unisa against the inventory to make sure that you have received all the listed material. Consult <i>Study @ Unisa</i> for the procedure to follow if some items of the study material are missing.</p> <p>Browse through and then study Tutorial Letter 101 and the study guide to determine the scope of the module. Note the assignment due dates on your desk calendar.</p> <p>Study all study units of the study guide and, make sure that you also complete the accompanying activities.</p> |
| <b>March</b>                | <p>Study the requirements for Assignment 01, complete and submit the assignment. Please do not wait for the due date to upload (i.e., submit) your assignment because too many students tend to wait for the submission date before they upload their assignments on myUnisa. This tends to present problems because of high volumes of assignments.</p>                                                                                                                                                                                        |
| <b>April</b>                | <p>Study the requirements for Assignment 02, complete and submit the assignment. Please do not wait for the due date to upload (i.e., submit) the assignment on myUnisa.</p>                                                                                                                                                                                                                                                                                                                                                                    |
| <b>May</b>                  | <p>Study the requirements for Assignment 03, complete and submit the assignment. Make sure to re-read the study guide as most of the questions in this assignment are based on the study guide.</p> <p>Please do not wait for the due date to upload (i.e., submit) the assignment on myUnisa.</p>                                                                                                                                                                                                                                              |

|                      |                                                                                                                                                                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>June and July</b> | <p>Study the requirements for Assignment 04, read all relevant literature excerpts prescribed for this assignment and, thereafter, complete and submit the assignment.</p> <p>Please do not wait for the due date to upload (i.e., submit) the assignment on myUnisa.</p> |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## **8 PRACTICAL WORK**

Not applicable to this module.

## **9 ASSESSMENT**

### **9.1 Assessment criteria**

Assignments are seen as part of the learning material for this module. As you do the assignment, study the reading texts, consult other resources, discuss the work with fellow students or tutors or do research, you are actively engaged in learning. Looking at the assessment criteria given for each assignment, it will help you understand what is required of you more clearly.

In some cases, additional assessment might be available on the myUnisa site for your module. For students attending tutorial sessions, tutors may also set additional tasks and give feedback in class.

### **9.2 Assessment plan**

The assessment will only consist of formative assessments (continuous assessment). This module is following an online continuous assessment approach. In continuous assessment, the principles of a participation mark and a final examination mark are not used. This means that there will be several compulsory formative assessments throughout the year to assess students' ongoing progress with respect to the attainment of outcomes pertaining to this module. There will be no single final summative assessment (examination).

The rationale for continuous assessment is to ensure that students work consistently. The continuous assessment model provides early indicators of student performance, with built-in measures of feedback and support to guide students towards mastering particular areas within the module. The aim is to foster critical awareness and reflection by students to enable them to take responsibility for their learning and monitor their own progress. Continuous assessment provides regular progress updates for students through lecturer feedback.

Assessment tasks are designed to scaffold student learning. Scaffolding means that each task builds on preceding tasks/learning to enhance understanding and to integrate learning. This will allow the lecturer and students to identify and close learning gaps. This

means that there will be no additional supplementary opportunity once marks have been finalised. There will be four compulsory formative assessments, each contributing 25% towards the promotion mark. In the event you were unable to submit either assessments 02 or 03 or 04, assessment 05 can be submitted. Please note that assessment 01 **cannot** be replaced by Assessment 05.

In essence, this is a **continuous assessment** module which consists of **four compulsory** assignments. Assignments 01 to 04 are **COMPULSORY** and, therefore, each of these assignments **MUST** be submitted on or before the due dates. Each assignment contributes **25%** towards your **course mark** or **final mark**. To pass this module, you need to obtain an average minimum of **50%** from the four compulsory assignments. **Assignment 05 can ONLY be submitted in the event any ONE of the following assignments was not submitted – 02 or 03 or 04.**

| Number of formative assessments                                                                                      | Type of assessment                                                                                  | Percentage towards the promotion mark |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------|
| Assessment 01<br><br>Compulsory<br><br>(This assessment cannot be substituted by any one of the other 4 assessments) | Multiple Choice Question (MCQ) based assessment                                                     | 25 %                                  |
| Assessment 02                                                                                                        | Written assignment discussions                                                                      | 25%                                   |
| Assessment 03                                                                                                        | Written assignment discussions                                                                      | 25%                                   |
| Assessment 04                                                                                                        | Written assignment discussions                                                                      | 25%                                   |
| Assessment 05                                                                                                        | Contingency assessment - completed <b>ONLY</b> in case you did not submit assessment 02 or 03 or 04 | 25%                                   |

### 9.3 Assessment due dates

- There are no assignment due dates included in this tutorial letter.

- Assignment due dates will be made available to you on the myUnisa landing page for this module. We envisage that the due dates will be available to you upon registration.
- Please start working on your assessments as soon as you register for the module.
- Log on to the myUnisa site for this module to obtain more information on the due dates for the submission of the assessments.

#### 9.4 Submission of assessments

- Unisa, as a comprehensive open distance e-learning institution (**CODeL**), is moving towards becoming an online institution. You will therefore see that all your study material, assessments and engagements with your lecturer and fellow students will take place online. We use myUnisa as our virtual campus.
- The myUnisa virtual campus will offer students access to the **myModules** site, where learning material will be available online and where assessments should be completed. This is an online system that is used to administer, document, and deliver educational material to students and support engagement between academics and students.
- The myUnisa platform can be accessed via <https://my.unisa.ac.za>. Click on the **myModules** 2023 button to access the online sites for the modules that you are registered for.
- The university undertakes to communicate clearly and as frequently as is necessary to ensure that you obtain the greatest benefit from the use of the **myModules** learning management system. Please access the announcements on your **myModules** site regularly, as this is where your lecturer will post important information to be shared with you.
- When you access **your myModules** site for the module/s you are registered for, you will see a welcome message posted by your lecturer. Below the welcome message you will see the assessment shells for the assessments that you need to complete. Some assessments may be multiple choice, some tests, others written assessments, some forum discussions, and so on. All assessments must be completed on the assessment shells available on the respective module platforms.
- To complete quiz assessments, please log on to the module site where you need to complete the assessment. Click on the relevant assessment shell (Assessment 1, Assessment 2, etc.). There will be a date on which the assessment will open for you. When the assessment is open, access the quiz online and complete it within the time available to you. Quiz assessment questions are not included in this tutorial

letter (Tutorial Letter 101) and are only made available online. You must therefore access the quiz online and complete it online where the quiz has been created.

- It is not advisable to use a cell phone to complete the quiz. Please use a desktop computer, tablet or laptop when completing the quiz. Students who use a cell phone find it difficult to navigate the **Online Assessment** tool on the small screen and often struggle to navigate between questions and successfully complete the quizzes. In addition, cell phones are more vulnerable to dropped internet connections than other devices. **If at all possible, please do not use a cell phone for this assessment type.**
- For written assessments, please note the due date by which the assessment must be submitted. Ensure that you follow the guidelines given by your lecturer to complete the assessment. Click on the submission button on the relevant assessment shell on myModules. You will then be able to upload your written assessment on the myModules site of the modules that you are registered for. Before you finalise the upload, double check that you have selected the correct file for upload. Remember, no marks can be allocated for incorrectly submitted assessments.

## 9.5 The assessments

As indicated in section 9.2, you need to complete **four (4)** assessments for this module. **There are no assignments included in this tutorial letter.** Assignments and due dates will be made available to you on myModules for this module. We envisage that the due dates will be available to you upon registration.

### 9.5.1 Assignment 01

The first assignment, **i.e., assignment 01** is multiple choice and again details on where and how to complete it will be made available in due course via the online module site. You must complete Assignment 01. No other opportunities will be given.

- You must also complete **assignments 02, 03 and 04**
- Your lecturer may grant no more than one week extension for a written assignment on condition that you ask permission from the lecturer in advance before the due date for the assignment. Remember that the online submission system closes very soon after the due date, and, if you do not submit on time there is no guarantee that you will be able to submit later.
- If for any reason you do not submit either assignment, **02 or 03 or 04** you may submit **assignment 05**. If you do not submit the prescribed assignments, there is no other opportunity, and this is detrimental to your final mark for the module. No extension may be granted for multiple-choice assignments. Again, if you miss this assessment opportunity, there is no other opportunity.

- As such, only one assignment (**Assignment 05**) is offered as an alternative should you not be able to submit assignments **02 or 03 or 04**. Failure to submit the prescribed will impact negatively on your successful completion of this module.

## **ASSIGNMENTS**



### **COMPULSORY**

#### **ASSIGNMENT 01**

**Assignment 01 is compulsory. It consists of multiple-choice questions, which you have to answer on your module site. Please take note that as mentioned elsewhere in this tutorial letter, because assignment 1 is a multiple-choice assignment, it is not included in this tutorial letter. The details on where and how to complete it will be made available in due course via the online module site**



## COMPULSORY

### ASSIGNMENT 02

Assignment 02 is compulsory. Study learning units 1 to 3 of the study guide to help you complete this assignment. Also, feel free to read any other relevant scholarly sources.

#### QUESTION 1

Read the following article and answer the questions below:

#### **‘We are reaping the whirlwind’ – SA scientists say their climate change warnings have been ignored for years**

**By Gill Gifford, Nivashni Nair & Suthentira Govender – 17 April 2022  
Sunday Time Newspaper**

Extreme weather like the catastrophic floods that hit KwaZulu-Natal is becoming increasingly common in SA because of climate change, and the country’s ageing infrastructure can’t cope.

Experts say they have been sounding their alarm for years, but authorities have been slow to respond. They warn that these changes will affect food security, which will lead to higher food prices and ultimately more social unrest.

Professor Mike Muller of the Wits School of Governance said water scientists and managers have long warned that climate change will bring more extreme rainstorms.

“Because of this growing risk, water managers highlighted the importance of proper design, construction, maintenance, and management of storm water infrastructure, without which extreme rain will cause the kind of damage that we are seeing in KwaZulu-Natal.

“This is often ignored by the municipality leaders who often prioritise spending with immediate visible benefits rather than on infrastructure that may not even be needed during their term in office. But it is an essential part of disaster risk reduction, which is a municipality responsibility,” said Muller.

Drier, hotter droughts; more frequent and longer-lasting floods, rising sea levels, heatwaves and biting cold spells – such as Gauteng’s wet weather and gloomy December – are expected to increase. A report released last September by the university of the Witwatersrand’s Global Change Institute said the risk of severe storms, long-term droughts and heat waves will increase with climate change in Southern Africa. As a result, loss of life, injury and damage to infrastructure will increase. It found there is a high likelihood that

agricultural production in Southern Africa will decline and eventually collapse, while livestock production will become unviable.

University of KwaZulu-Natal (UKZN) town-planning expert professor Hope Magidimisha-Chipungu said scientists and researchers have warned that some coastal cities and nations will “literally disappear”, and the rest will need to adapt quickly.

Adriaan van der Walt, a University of the Free State senior lecturer, said SA’s infrastructure cannot handle extreme weather events. “Homes are more easily able to handle extreme heat, but very cold weather is a problem – particularly in informal settlements that cannot cope with freezing temperatures or flooding. And our energy sector is incapable of handling demand increases prompted by cold weather.

“What we are seeing in KwaZulu-Natal is horrifying, but already we are starting to see instances of the same happening in Gauteng, and even in Limpopo.

Rising sea levels, van der Walt said, are already being observed in places like Langebaan in the Western Cape where sandbags are being shored up against high tides in an effort to protect beachfront properties.

Climatologist Simon Gear said climate change is difficult to see from day to day “but locally we are seeing greater variability as our wet seasons get wetter, dry seasons get drier and average temperatures rise”.

Globally it is manifesting in events such as freak warm temperatures in Antarctica and wildfires in Australia. In South Africa it’s more subtle, seen in changes such as the ratio of grass to trees in the Kruger National Park where they study that kind of stuff closely. The interior is getting wetter and warmer, the Western Cape is getting drier and warmer,” he said.

Wits University research associate in climate change risk management professor Jasper Knight said the devastating effects of the floods can be blamed on poor governance and infrastructure maintenance failures. He said SA’s built infrastructure is not fit for purpose as it was constructed “50 or so years ago for conditions at that time” and does not adequately address 21<sup>st</sup> century needs.

“As cities grow, we need to build for the future and design for climate change and lower carbon emissions. Low-density housing, food markets and food gardens, renewable energy and green spaces that act as lungs and stop overheating are the way to go,” Knight said.

Another key area is agriculture. Farming provinces like the Free State have to adapt to depleted ground water and sudden flooding, he said.

Natasha Cronjé of the university of the Free State’s department of consumer science said climate change has a direct effect on food prices.

“The FAO [Food and Agriculture Organisation] estimates that for every 1°C increase in the global average temperature, global agriculture production decreases by 10%. Food production needs to be increased by 70% by 2050 to produce enough food for everyone on Earth,” she said, adding that with temperatures rising at double the global average, SA is a climate change hotspot.

Professor Tafadzwanashe Mabhaudhi, a UKZN climate expert, said there is a “general lack of preparedness” for dealing with extreme weather.

“We do have the South African Weather Service to issue warnings but there is a gap at local level. Informal residents bear the brunt of extreme weather because they live close to rivers where they can get water and on steep slopes where there is no proper town planning.”

Alistair Clulow, of UKZN’s department of agricultural, earth & environmental sciences agrees.

“We are going to have to build houses only in areas that are suitable for construction. At present we use any space that is available. Floodplains, dunes, steep slopes, near the sea, are all dangerous. We need to redesign our drains to accommodate more water, maintain them and keep them clear of rubbish. We also need to slow down the water in the catchments using vegetation such as grasslands, forest, and wetlands,” he said.

eThekweni municipality and the KwaZulu-Natal Department of Co-operative Governance & Traditional Affairs said they have disaster management plans in place.

Municipality spokesperson Mswakhe Mayisela said the city’s human settlements unit tries to ensure people are moved to transit camps before moving to their new homes once construction has been completed.

“It is an unfortunate reality that no matter how many houses are built or how many people are moved, informal settlements continue to mushroom across the city. Our land invasion unit has been working hard to ensure that illegal structures are removed. Despite all the city’s efforts, people continue to build illegally in areas that are not meant for settling,” said.

KwaZulu-Natal Department of Co-operative Governance & Traditional Affairs spokesperson Senzelwe Mzila said the removal of families from low-lying areas requires negotiations and cannot be achieved rapidly without compromising people’s rights.

“The issue of informal settlements is complex with varying challenges and multiple stakeholders. A large majority of settlements on river banks or within flood lines are informal settlements. These have been established primarily through informal processes and have not been enabled or approved by the municipalities”.

### **Now, answer the following questions:**

- 1.1 Mention the environmental problem that is central to this article. (1)

- 1.2 The article highlights **FIVE** key weather conditions that are likely to be on the increase due to climate change. Mention them. (5)
- 1.3 State **THREE** actions that are underscored by Knight as essential when planning for climate change in the RSA. (3)
- 1.4 Explain the impact that climate change has on food production, according to the article. (4)
- 1.5 Mention the **THREE** areas, near the sea, which are considered dangerous. (3)
- 1.6 Why are the areas mentioned above dangerous? (2)
- 1.7 Climate change is a product of global warming. What is global warming? (2)
- 1.8 What causes global warming? (2)
- 1.9 How could global warming be mitigated? (2)
- 1.10 Based on your reading of the passage, are South Africans, particularly the people in positions of authority like municipalities and government departments; doing enough to address the challenges that are linked to climate change and the concomitant effects arising from the impact of bad weather such as flooding? Use relevant information from the passage to help you respond adequately to this question. (10)

[34]

## QUESTION 2

Read the following article and answer the questions below:

### CLEAN WATER IS NOW KWAZULU-NATAL'S BIGGEST PROBLEM

**By Erika Gibson – 17 April 2022**  
**City Press Newspaper**

"Clean water is now the biggest crisis facing everyone," said Dr. Gideon Groenewald, chief geologist at Gift of the Givers.

"People are coming in on their boats. They mainly distribute water. You have to remember, all those sewage pipes are down, sewage is flowing everywhere. There is a great danger of diseases like cholera."

And while Gift of the Givers and other organisations such as the National Sea Rescue Institute jumped in from the start to assist stranded people, help from the SA National Defence Force was slow in coming.

In one case, 52 school children in Folweni were trapped by floodwaters in their school building overnight. The air force had no rescue helicopters available by Tuesday, and Discovery, Transnet and the police finally brought them to safety.

On Wednesday, army chief general Rudzani Maphwanya said that they had brought resources from other provinces on Tuesday night after 15 squadrons and the police air wing in Durban itself suffered flood damage. Photos were circulated on social media showing air force and police helicopters stranded in deep water in flooded aircraft sheds.

“But one helicopter was ready in Durban by Wednesday morning to help,” said Maphwanya.

eThekwini’s emergency services and local businesspeople also stepped in to make roads passable in order to evacuate injured people and corpses as well as bring in supplies.

“Clean water, food and shelter are necessities in many of the areas. In the midst of all the floodwaters, water pipelines were destroyed,” said Anton Müller, a businessperson and community leader in uMhlanga.

According to him, the riots in July last year helped create community networks that are now operational again.

“In our area, there is a network of businessmen, private security companies, emergency services, paramedics, plumbers, and electricians. Everyone works together.

“We work shoulder to shoulder and dig holes where water dammed up and people’s belongings are under water. That’s how we make things work,” said Müller.

Umgeni Water, which is responsible for the water supply to eThekwini, said some of its water pipes that convey sewage were destroyed in Inanda. It is also unable to pump water from the Mthwalume River on the South Coast or from the Umzinto River Dam due to the floods.

According to Umgeni Water, the drinking water supply in the eThekwini, Ugu and iLembe districts is contaminated.

There are similar problems with the water purification systems that supply drinking water from the South Coast areas to Umzinto and Mthwalume, Umgeni Water said.

**Now, answer the following questions:**

- 2.1 The article refers to contaminated water. Mention any **THREE** potential sources of water contamination under the circumstances referred to in the article? (3)
- 2.2 The article cites Dr. Groenewald, chief geologist at Gift of the Givers, as having referred to the possibility of cholera spreading due to water contamination.

- 2.2.1 The concerns about the potential spreading of cholera came at a bad time as there was a pandemic that was ravaging the country and the world. Mention this pandemic. (2)
- 2.2.2 Mention **ONE** way in which the pandemic you mentioned in 2.2.1, above, could be spread around. (2)
- 2.2.3 Mention two ways suggested by the World Health Organisation as measures to “**protect yourself and those around you**” from the pandemic you mentioned in 2.2.1. (4)
- 2.2.4 The word *pandemic* differs from the word *epidemic*. Consult an appropriate source or sources to help you distinguish between the two words. (4)
- 2.3 The article quotes army chief General Rudzani Maphwanya as having said that “the riots in July last year helped create community networks”.
  - 2.3.1 To which riots is the article referring? (1)
  - 2.3.2 Mention two provinces that were mostly affected by these riots. (2)
  - 2.3.3 What impact did these riots have on the **socio-physical and economic environment**? (4)

[22]

### QUESTION 3

Read the following article and answer the questions below:

#### **Nelson Mandela Bay ‘will run dry by June’**

**By Guy Rogers – 08 May 2022**  
**Sunday Times Newspaper**

Nelson Mandela Bay is in danger of running out of water and the only solution is to cut consumption – drastically and immediately.

That was the message on Thursday night at the milestone virtual public meeting hosted by executive mayor Eugene Johnson and water and sanitation director Barry Martin. The meeting was carried on various online platforms, as well as via satellite screenings in community halls across the metro.

Martin reiterated what he told the council on Tuesday – that the Bay’s dams were on average at just 2.53% of capacity and, with no significant rain predicted for the next four months, nearly half the metro will have no water by June unless consumption is cut immediately.

He said the Nooitgedacht treatment plant, the end point of the Gariep Dam water supply line on the northern side of the metro, has been successfully expanded and was delivering 209 megalitres a day.

Even with the bit of extra water from the Bay's old dams and the Kariega spring, this was still far short of the metro's current consumption of 280 megalitres a day.

Moreover, water from Nooitgedacht can't be transferred until the refurbishment of the KwaNobuhle pump station has been completed, and that is scheduled for July.

Martin urged residents to consult the information dashboard on the municipal website to help them make the necessary cut to a maximum 5l per person per day.

"There is a usage calculator to help you work out how much water typical activities use."

He said the more consumption could be cut, the further back the dry dams deadline could be pushed and the more time there would be for several other key interventions to come on line.

Besides the KwaNobuhle pump station, these include several boreholes complexes which would together deliver 30 megalitres a day into the Bay water grid once completed in August.

Nine hundred people participated live in the Thursday night webinar and the comments in the chat box were sceptical and angry.

"Asking residents to spare water is not solving the crisis. You actually have to come up with a solid plan. By your own admission you have had years in which you have done nothing," one resident said.

Another said: "Stop with the 'beloved' and 'family'. The municipality is to blame for the water leaks. PE itself received a lot of rain recently. Why don't you subsidise water tanks for households?"

Martin said water-shedding was not an option because it would result in skewed supply between high-lying and low-lying areas when valves were closed.

It would also compromise water quality as the velocity of water moving through the pipes varied and sedimentation was loosened.

In addition, it would increase pressure on the metro's already fragile and overworked water grid. There would be more burst pipes and more water would be lost than saved.

Martin said the best strategy was to deploy water tankers and install water collection points.

His team would proceed with this strategy if the dams failed.

But Martin said these interventions with all the security, cost, and organisational challenges they would require, could still be avoided.

"We need to use a maximum of 50l per person per day and not more than 6 megalitres a month on average four-person household.

“That will bring down our consumption dramatically, but only if everyone plays their part.” –  
**Weekend Post**

**Now answer the following questions:**

- 3.1 According to the article, Barry Martin, the water, and sanitation director of Nelson Mandela Bay Municipality, suggested numerous water consumption measures for the residents. Mention **TWO** of those measures. (2)
- 3.2 Read the statements made by the angry residents cited in the article very carefully. From my reading of their statements, it appears some residents within the Nelson Mandela Bay Municipality believe that only the municipality and no one else has the responsibility to conserve water. What is your view on this issue? Your response should demonstrate that you have critically reflected on the issues raised on the article. (10)
- 3.3 Apart from the measures mentioned in the article, several measures could be used to minimise water wastage and consumption. Suggest any **FOUR** practical measures that could be used to minimise water wastage and consumption. (8)

**[20]**

#### **QUESTION 4**

Read the following statement carefully and answer the questions below:

“Air and water pollution do not respect national boundaries. We can stop a humanitarian and political crisis from becoming an existential one. But our leaders must act now.”  
 Sailesh Mehta, a barrister specialising in environmental cases.

- 4.1 With the above statement in mind, explain how the ***economic component of the environment*** contributes to ***air and water pollution***. (6)
- 4.2 Explain how the ***political component of the environment (or political actions)*** ***could*** contribute negatively to the challenge of ***air and water pollution problems*** that do not respect ***national boundaries***? (4)

**[10]**

#### **QUESTION 5**

**Read learning unit 3 very carefully to help you answer the following question. Feel free to refer to any other relevant scholarly source.**

- 5.1. You have just joined a new school where you teach Grade 7 Natural Sciences, and you immediately notice that there is an environmental problem which threatens

biodiversity in the school. The school community dumps in an undesignated area where various recently planted species are beginning to grow. Also, the dumping site is very nearer to a fishpond. As a result, harmful pollutants are leaching into the pond.

As an environmentally **aware**, **knowledgeable**, and **skilled** environmentalist you decide to involve your Grade 7 class in a mini project to address this environmental problem. Accordingly, you commence with the process of planning to teach *about*, *in* and *for* the environment. The ultimate goal being to have the problem addressed.

Briefly discuss how you would go about teaching ***about***, ***in*** and ***for*** the environment to address this challenge. In your discussion, please accommodate and indicate how you would use the following methods: **information transfer**, **investigative**, **deliberative**, and **learning by doing methods**. (14)

[14]

**TOTAL: 100 MARKS**



## COMPULSORY ASSIGNMENT 03

Assignment 03 is compulsory. Study learning units 1 to 3 of the study guide to help you complete this assignment. Also, feel free to read any other relevant scholarly sources.

### QUESTION 1

Read excerpt 1 in the addendum with the title: ***The decolonial role of African indigenous languages and indigenous knowledge in formal education processes*** written by Shava S and Manyike TV (2018) very carefully and, answer the questions below.

- 1.1 According to the authors, “**indigenous knowledges refer to the knowledges of indigenous peoples across the globe**”. Define the concept of “**indigenous knowledge**” in your own words. However, if you decide to look for scholarly texts to help you define this concept, please ensure that you acknowledge your sources. (2)
- 1.2 Mention the seven main features of indigenous knowledge referred to in the article. (7)
- 1.3 According to the authors, indigenous knowledges change over time. State whether this statement is true or false; quote a sentence from the passage to support your response. (4)
- 1.4 Read paragraph 4 of the introduction very carefully and explain how, on the one hand, indigenous languages are used to enhance the wisdom of indigenous people while, on the other hand, western (colonial) languages are used to undermine indigenous people. (5)
- 1.5 The article quotes Odora Hoppers (2001) who argues that, knowingly or unknowingly, teachers contribute to (post)colonial exclusion of indigenous knowledge systems by emasculating and belittling “**the value of indigenous knowledges and languages**” and, that they exclude “**the learners’ local context in formal education**”.

Refer to your own experience as a learner and mention one way in which your indigenous language and/or indigenous knowledge (as a learner) was undermined and/or belittled or, if you are (or were) a teacher, mention how you might have undermined or belittled a learner’s indigenous language and/or indigenous knowledge. If you are unable to refer to your own experiences, you are free to use someone’s experiences in this case. (4)

- 1.6 Semali (1999:9) suggests that during his schooling days in Tanzania, the knowledge ‘transmitted’ to Africans by colonialists was foreign to the socio-environmental realities of Tanzania. Quote a sentence which highlights this reality as experienced by Semali (1999) and explain why this knowledge was alien to indigenous Tanzanians. (4)
- 1.7 Shava & Manyike (2018) cite Handerson (1991: 12) who refers to an Iroquoian Indian youth who obtained the best modern education which was of no use because they (Iroquoian Indian youth) were detached from their environment. Quote a sentence from the passage which suggests that the youth referred to were detached from their indigenous environment. (2)
- 1.8 Read “**Case 2: Teaching botany to indigenous learners**” very carefully and answer the following questions.

One of the writers of the text highlights the “**people-plants connection**” demonstrated by his/her students after the writer accommodated the inclusion of indigenous/local plants in classroom discussion. The writer adds that, “**this process revealed that the indigenous students had considerable knowledge about indigenous local plant taxonomy, use and ecology in their own socio-cultural contexts**”.

Historically, especially prior to colonialism, indigenous African people across the continent of Africa have always had a healthy “**people-plants connection**”; there are many others who still have this connection. One such connection is discernible from the use of plants for various purposes. For example, personally, I still use the herb commonly known as **African wormwood** in English (scientifically, *Artemisia afra*) for colds and influenza. This herb is used by various indigenous people in South Africa (and elsewhere in the continent and beyond) and is referred to by various names. For instance, we call it **umhlonyane** in isiXhosa, it is called **Wilde Als** in Afrikaans, **lengana** in Setswana and **muvenghonye** or **mubanda** in Shona.

Mention three different plant species that are used in your indigenous culture and state just one use for each plant species. If plants are not used in your culture, please select, or identify any other culture which uses plants. You **MUST** structure your response as follows:

| Common English name | Scientific name | Its name in your indigenous language (or another indigenous language of your choice)<br>e.g., isiXhosa | Its name in another indigenous language<br>e.g., Setswana | Use(s) |
|---------------------|-----------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|--------|
|                     |                 |                                                                                                        |                                                           |        |

|                  |                       |            |         |                         |
|------------------|-----------------------|------------|---------|-------------------------|
| African wormwood | <i>Artemisia afra</i> | Umhlonyane | Lengana | To cure colds and fever |
|                  |                       |            |         |                         |
|                  |                       |            |         |                         |

(15)

**NB: Please indicate the source of information for the above information to enable us to verify your supplied data. [43]**

## QUESTION 2

Read excerpts 2 to 5, **especially Excerpt 2**, in the addendum very carefully and answer the following questions. You can use any other sources to help you respond to the questions. However, if you do use other sources, make sure that you acknowledge them by means of a complete list of references at the end of this assignment.

- 2.1 Use your own words to define the following concepts fully (a single word or phrase will not be accepted as a definition).
  - 2.1.1 Totem. (2)
  - 2.1.2 Taboo. (2)
  - 2.1.3 Proverb. (2)
- 2.2 According to Chibvongodze (2016), Africans “conveniently utilise cultural beliefs and norms embedded in taboos, totems, and proverbs” to foster the conservation of the environment.
  - 2.2.1 Explain the word “temporal taboo” as used in one of the excerpts. (2)
  - 2.2.2 Refer to one of the literature excerpts in the addendum and identify one temporal taboo applicable to rural communities of Zimbabwe and explain how this taboo can contribute to environmental sustainability. (4)
  - 2.2.3 Read one of the excerpts and identify one ‘set’ of taboos applicable to the Igbo people of Nigeria and their relationship with the environment. (2)
  - 2.2.4 In your opinion, do you think taboos can or do contribute to the sustainability of the environment. Justify your answer (you may use your own experiences to help you justify your response). (2)
  - 2.2.5 Apart from *temporal taboos*, mention any **THREE** other types of taboos referred to in the passage, other than temporal taboos. (3)
- 2.3 Refer to one of the literature excerpts (excerpts 2 to 5) to help you ... Identify 4 different clan names and their concomitant totems and explain how, according to indigenous knowledge systems and beliefs, each clan you mentioned

could contribute to the conservation of animals and maintain the link between the living and the dead. (Please refer to any of the excerpts to help you answer this question). (12)

2.4 **Mention** your **clan name** and **totem**, and **explain how**, according to African indigenous knowledge systems and beliefs, your totem would enable (or enables) you to contribute towards the sustainability of the environment (If you do not have a clan name and/or a totem, you may use the clan-name/totem of one 'famous' person of your choice to help you respond to this question). (4)

2.5 Literature suggests that African proverbs do not only demonstrate the richness of African languages, but they also demonstrate the link and co-existence, especial in precolonial Africa, between people, plants, and animals. Also, that proverbs highlight the importance of environmental conservation and sustainability.

2.5.1 Write down an African proverb in an indigenous African language and provide the meaning of that proverb in English. Thereafter, explain how the meaning of the proverb encourages environmental sustainability or could be used to encourage sustainability (If you prefer to use another language, other than an African language, you are free to do so. However, please take note that English proverbs are not acceptable in this case). (6)

2.6 Read the following statement and the article by Chibvongodze (2016) very carefully and, thereafter, answer the question below.

“When possible, interviews were conducted on Tuesdays when fishers are more available since the taboo forbids fishing on this day” – (Alexander, Agyekumhene & Allman, 2017)

Identify the type of taboo referred to above and justify your choice by providing a clear explanation which indicates that you are able to distinguish between the various taboos mentioned in the text by Chibvongodze (2016). (4)

2.7 Read the articles by Shava & Manyike (2018) and Chibvongodze (2016), respectively, very carefully to help you respond to the questions below.

2.7.1 An in-depth reading of and critical reflection on the two articles suggests that indigenous languages, indigenous knowledge systems and epistemologies have a cardinal role to play in rethinking and repositioning education, and African human life in general by, *inter alia*, recognising and centralising the value and importance of indigenous languages, knowledges, and systems. Accordingly, Shava & Manyike (2018) conclude by writing that:

We need to be asking questions as to what sort of education should be happening in African schools and what sort of knowledge should be taught? There is a need to reconnect our learners with their indigenous social and natural environments, to re-contextualise learning by connecting the school

to the home and lived context of the learner. This requires the diversification of our curricula to include multiple (including indigenous) languages, indigenous epistemologies, indigenous teaching approaches, pedagogies, and methodologies (p. 49).

In your view, do you think that the elements of the African indigenous knowledge systems such as taboos, totems, and proverbs, as used in the literature excerpts prescribed for this assignment, should play a part in the current era. Present a clearly substantiated reason or set of reasons to justify your response by referring to **taboos** and **totems** (i.e., why you think **taboos** and **totems** are relevant or irrelevant). (4)

2.7.2 Do you agree with the above argument? If your response is in the affirmative, explain why you agree and, furthermore, discuss how learners, particularly indigenous African learners, can be reconnected with their **indigenous social environment** and **natural environments**. Likewise, if you disagree with the above assertion, substantiate your argument by elaborating why you disagree with the final points raised by the authors. Although we would like to obtain your perspective(s), you are free to consult any relevant source(s) to help you provide a meaningful response to this question. Please ensure that you acknowledge all sources consulted by means of a complete list of references at the end of the assignment. (8)

[57]

**Total Marks = [100]**



## COMPULSORY ASSIGNMENT 04

Assignment 04 is compulsory. Study learning units 1 to 3 of the study guide to help you complete this assignment. Also, feel free to read any other relevant scholarly sources.

### QUESTION 1

Study the following diagram depicting a simple grassland food web very carefully and answer the questions below. Please take note that your study guide may be very helpful in enabling you to respond to these questions.

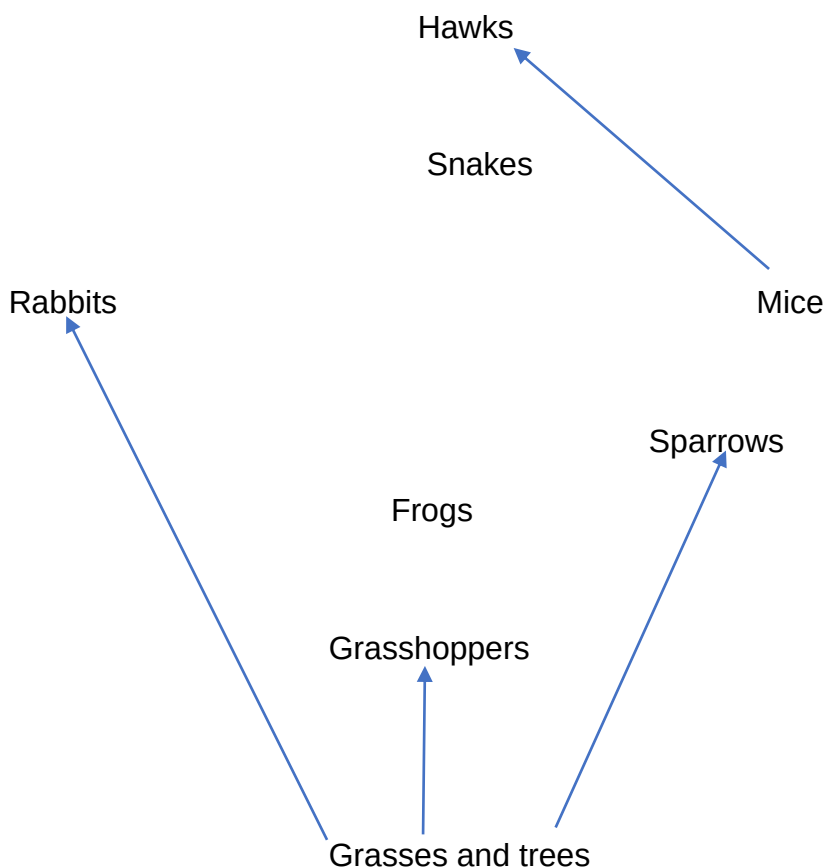


**Figure 1.** A simple grassland food web

- 1.1. Mention **THREE** possible food sources for the hawks in the above food web. (8)
- 1.2. Suppose the populations of grasshoppers and mice emigrate from the above ecosystem.
  - 1.2.1. Mention one possible impact this would have on the population of sparrows. (2)

- 1.2.2. Mention one possible impact this would have on the population of frogs. (2)
- 1.2.3. Mention one possible impact this would have on the population of hawks. (2)
- 1.2.4. Generally, what initial impact would the emigration of the grasshoppers and mice have on the above ecosystem? Explain briefly. (6)
- 1.2.5. The migration, emigration and edaphic factors can contribute to the **imbalance of the ecosystem**. What is meant by the **imbalance of the ecosystem**? Please use **the organisms mentioned** in the above ecosystem as points of reference to help you demonstrate your understanding of this phrase. (4)
- 1.3. There are various forms of competition (e.g., competition for food) that occur in the above ecosystem. The kind of competition that takes place between **TWO** organisms belonging to the same species, e.g., competition between a hawk and another hawk, is called (**interspecific, intraspecific**) competition. Choose the correct word from the alternatives in brackets. (2)
- 1.4. Mention **FOUR** organisms that compete for grasses and trees in the above food web. (8)
- 1.5. State **TWO** organisms that compete for rabbits in the above food web. (4)
- 1.6. Define the word producer as used in ecology. (2)
- 1.7. Mention the ultimate energy producer in all ecosystems, universally. (2)
- 1.8. What is the role of soil bacteria in the ecosystem? (2)
- 1.9. Write a simple food chain consisting of **FIVE** organisms. NB: Use **ONLY** the organisms depicted in the above food web. (10)
- 1.10. This ecosystem consists of “preys” and “predators”. Distinguish clearly between the concepts of prey and predator as used in an ecological sense. In your response also provide one example of a predator and prey, respectively, from the above ecosystem. (6)
- 1.11. Ecosystems have the ability to “self-regulate”. Explain the concepts of “self-regulation” as it applies to ecosystems. (2)
- 1.12. Human beings tend to disrupt the ability of ecosystems to self-regulate. Justify this claim by providing one way in which humans upset the ability of ecosystems to self-regulate. (2)
- 1.13. What impact does the human tendency to disrupt the self-regulation of ecosystems have on biodiversity? In your response, refer to just one practical example which is not confined to the above ecosystem. You may use an event reported in the media as a point of reference. (6)
- 1.14. Environmental education (EE) can be used to mitigate human behaviours that disrupt ecosystems. Explain how EE could be put to good use to mitigate the impact of human behaviour through the application of the following Tbilisi Principle: Environmental education ***should be interdisciplinary in its approach, drawing on***

***the specific content of each discipline in making possible a holistic and balanced perspective.*** In your response, feel free to refer to the above or any other relevant food web. Please also ensure that you explain what the above EE Principle entails. (8)

- 1.15. Environmental education can be taught through the use of the popular triadic approach to pedagogy, namely education *in*, *for* and *about* the environment. Briefly distinguish between the three approaches and in your response briefly state how these approaches could be applied in the classroom to teach about ecosystems. Please use the above ecosystem as an example. (12)
- 1.16. Apart from biotic factors, abiotic factors are also found in various ecosystems. State **TWO examples** of abiotic factors that would be found in the above ecosystem. (4)
- 1.17. Explain how each of the abiotic factors you mentioned in 1.17 impacts the ecosystem. (6)

**TOTAL MARKS = [100]**

## OPTIONAL

### ASSIGNMENT 05

Assignment 05 is optional and must be completed **ONLY** in the event you did not pass one of **THREE** assignments (02 to 04). Study learning units 1 to 3 of the study guide to help you complete this assignment. Also, feel free to read any other relevant scholarly sources.

#### QUESTION 1

Read **the article: by Semanya et al. (2012)** with the title, *Medicinal utilization of exotic plants by Bapedi traditional healers to treat human ailments in Limpopo, South Africa*, very carefully and answer the following questions. You can use any other sources to help you respond to the questions. However, if you do use other sources, make sure that you acknowledge them by means of a complete list of references at the end of this assignment.

- 1.1. Define the following words/phrases Alien species, biodiversity, indigenous plants.
  - 1.1.1 Alien plant species. (2)
  - 1.1.2 Biodiversity. (2)
  - 1.1.3 Indigenous plants. (2)
- 1.2. Mention any **TWO** plants that are indigenous to the RSA. Please indicate the source(s) of your information, not more than **TWO** sources. (6)
- 1.3. How can the use of the exotic plants referred to in the article help the environment when used for medicinal purposes? (4)
- 1.4. Mention the **THREE** categories of exotic plants according to the article. (3)
- 1.5. Based on the distinction provided by the authors between naturalise plants, weeds, and invasive species, which one would you consider the most undesirable and why? (4)
- 1.6. Mention any **TWO** benefits of exotic plants to humans. (2)
- 1.7. Mention any **THREE** countries where, according to the article, exotic plants are used for traditional medicinal purposes (please do not refer to countries not mentioned in the article as you will not earn marks for this). (3)
- 1.8. Read the following statement carefully and use the information from the passage to help you critique its validity. (3)

According to the study conducted in Limpopo as detailed in the article, just like all weeds, naturalised exotic weeds should be discarded as they are useless. Is this statement true or false? Please justify your answer by referring to the article.

- 1.9. According to the article, “about 28,5% of exotic species used by Bapedi traditional healers are caught in the web of conservation policy (CARA Act No. 43 of 1983) in South Africa.... These have been declared highly invasive and referred to as biological pollutants by Conservation of Agricultural Resource Act (1983). Consequently, CARA legalises their indiscriminate eradication without consideration for their potential economic and human wellbeing importance. The South African Government has adopted chemical, physical, and biological strategies to control some of these species” (p. 652).

However, the authors of the article opine that, “plant conservationists and policy makers in South Africa need to orchestrate an appropriate programme to protect the medicinal properties hidden in exotic species” (ibid.)

Explain why this is essential from the biodiversity point of view, traditional, ‘Western’ medicinal point of view and economic perspective. (20)

- 1.10. The article points out that, “today in South Africa, at least 161 exotic species have been declared as the worst invaders and are listed under the Conservation of Agricultural Resources Act (1983) (CARA) No. 43 of 1983. With strong recommendations and strategies to eradicate or control their growth in cultivated lands and in the wild” (p. 647).

Do you think it would be a wise idea to eradicate the growth of exotic plants species “in the wild”? Validate your answer. (7)

- 1.11. According to the article, 20% of the exotic species documented by Semanya et al. (2012), were used to treat more than one ailment. Study the text and table 2 carefully and, identify **THREE** of these species and mention just **ONE** ailment that could be treated by each species you mentioned.

In your response ensure that you provide the following information: the name of the species, family to which the species belongs, the common Sepedi name and medicinal use. Please present your response in tabular form as indicated below. NB: make sure that you identify species that have Sepedi names and not the ones whose Sepedi name is “unknown”.

| Species name                    | Family name | Indigenous Sepedi name | Medicinal use                     |
|---------------------------------|-------------|------------------------|-----------------------------------|
| e.g., <i>Medicago sativa</i> L. | Fabaceae    | Luserene               | For the treatment of heart attack |
|                                 |             |                        |                                   |

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|  |  |  |  |

(12)

**1.12. Read the following citations very carefully and answer the question below**

Indigenous knowledge “is practical common sense, based on teachings and experience passed on from generation to generation” – (World Bank 1998, p. 8).

The various “forms of African indigenous knowledge are predominantly intuitive knowledge, common sense knowledge, mystical knowledge, inferential knowledge, oral tradition, and holistic knowledge” – (Ejike 2020, p. 23)

The phrase **common sense** appears in both quotations, above. Viewed from the context of the article by Semanya et al. (2012), arguably, this suggests that the knowledge about medicinal plants as part of indigenous knowledge systems is not only limited to herbalists.

Do you affirm or dispute the above claim? Justify your response as follows: (a) Cite a sentence or statement from the article to support your answer and (b) use your experience and/or knowledge of herbal use by you or the people in your community (or some other community you know of) to help you dispute or affirm the claim. (5)

1.13. According to the article, “the most commonly used plant part for herbal preparations in this study was the root (52,5%), followed by the leaf (20%), whole plant (12,5%) and the fruit (7,5%)” – Semanya et al (2012, p. 652).

Analyse the preceding statement and comment on the implications of the above action(s), i.e., the actions mentioned in the statement, on the biodiversity and preservation of all plants used by herbalists anywhere in the world. (5)

1.14. According to your study guide, “A persistent problem in South Africa is invasive alien species that degrade and alter our natural ecosystems by competing with and eliminating indigenous species. The most affected areas are wetlands and riverine ecosystems. An estimated 20 million acres (16%) of South Africa’s ecosystems are invaded” (p. 42).

Undeniably, exotic plants, including invasive species, pose a serious threat to the ecosystem and biodiversity. However, on the flip side, as the article suggests; these plants can also be very useful in enhancing biodiversity.

Based on your reading of the article, critically evaluate the importance of exotic plants, and briefly discuss how a balance could be created to ensure that exotic

species are not completely eliminated while also ensuring that they (exotic plant species) do not pose a threat that could eliminate indigenous plants. (20)

**Total marks = [100]**

## **9.6 Other assessment methods**

There are no other assessment methods applicable to this module.

## **9.7 The examination**

As this is a continuous assessment module, there will be no formal examinations for this module. What is important is that you complete and do well in each of the assignments that you need to complete for this module.

### **9.7.1 Invigilation/proctoring**

Since 2020 Unisa conducts all its assessments online. Given stringent requirements from professional bodies and increased solicitations of Unisa's students by third parties to unlawfully assist them with the completion of assignments and examinations, the University is obliged to assure its assessment integrity through the utilisation of various proctoring tools: Turnitin, Moodle Proctoring, the Invigilator App and IRIS. These tools will authenticate the student's identity and flag suspicious behaviour to assure credibility of students' responses during assessments. The description below is for your benefit as you may encounter any or all of these in your registered modules:

**Turnitin** is a plagiarism software that facilitates checks for originality in students' submissions against internal and external sources. Turnitin assists in identifying academic fraud and ghost writing. Students are expected to submit **typed** responses for utilisation of the Turnitin software.

The **Moodle Proctoring tool** is a facial recognition software that authenticates students' identity during their Quiz assessments. This tool requires access to a student's **mobile or laptop camera**. Students must ensure their camera is activated in their browser settings prior to their assessments.

The **Invigilator "mobile application-based service** does verification" of the identity of an assessment participant. The Invigilator Mobile Application detects student dishonesty-by-proxy and ensures that the assessment participant is the registered student. This invigilation tool requires students to download the app from their Play Store (Google, Huawei and Apple) on their **mobile devices** (camera enabled) prior to their assessment.

**IRIS Invigilation** software verifies the identity of a student during assessment and provides for both manual and automated facial verification. It has the ability to record and review a student's assessment session. It flags suspicious behaviour by the students for

review by an academic administrator. IRIS software requires installation on students' **laptop devices** that are enabled with a webcam.

Students who are identified and flagged for suspicious dishonest behaviour arising from the invigilation and proctoring reports are referred to the disciplinary office for formal proceeding.

**Please note:**

Students must refer to their module assessment information on their myModule sites to determine which proctoring or invigilation tool will be utilised for their formative and summative assessments.

## **10 ACADEMIC DISHONESTY**

### **10.1 Plagiarism**

Plagiarism is the act of taking the words, ideas and thoughts of others and presenting them as your own. It is a form of theft. Plagiarism includes the following forms of academic dishonesty:

- Copying and pasting from any source without acknowledging the source.
- Not including references or deliberately inserting incorrect bibliographic information.
- Paraphrasing without acknowledging the original source of the information.

### **10.2 Cheating**

Cheating includes, but is not limited to, the following:

- Completing assessments on behalf of another student, copying the work of another student during an assessment, or allowing another student to copy your work.
- Using social media (e.g., WhatsApp, Telegram) or other platforms to disseminate assessment information.
- Submitting corrupt or irrelevant files as per examination guidelines
- Buying completed answers from so-called “tutors” or internet sites (contract cheating).

### **10.3 For more information about plagiarism, follow the link below:**

<https://www.unisa.ac.za/sites/myunisa/default/Study-@-Unisa/Student-values-and-rules>

**NB: For the purposes of this module, I have included a declaration form as part of an effort to ensure academic honesty in respect of the writing and submission of assignments. Please complete it and attach it to each written assignment. The form is found in the addendum.**

## 11 STUDENTS WITH DISABILITY

The Advocacy and Resource Centre for Students with Disabilities (ARCSWiD) provides an opportunity for staff to interact with first-time and returning students with disabilities.

If you are a student with a disability and would like additional support or need additional time for assessments, you are invited to contact (please contact either Dr. Headman Hebe or Prof. Soul Shava, the details are contained in ...of this tutorial letter.) to discuss the assistance that you need.

## 12 FREQUENTLY ASKED QUESTIONS

The following are some of the questions that students tend to ask. It is important to note that most of these questions are already answered in this tutorial letter.

**Question: When must I submit my assignment?**

*Answer: Each assignment **MUST** be submitted by the due date as submission extension dates are not provided.*

**Question: Can I fax or e-mail my assignment to the lecturer?**

*Answer: No. You can **ONLY** submit your assignment via myUnisa. In case you have challenges with myUnisa portal, please contact the assignment section. If you do not obtain assistance, you may contact your lecturer.*

**Question: I received an examination timetable but the module IED1501 does not appear on the timetable. Where can I find it?**

*Answer: There is no examination in this module because it is a continuous assessment module.*

**Question: How do I contact my module lecturer?**

*Answer: Consult Tutorial Letter 101 for contact details of your lecturer.*

**Question: Do I have to include a declaration form in my assignment?**

*Answer: Yes. The declaration form is included in the addendum of this tutorial letter. Please complete and sign it and attach it to all your written assignments.*

## 13 SOURCES CONSULTED

The following sources were consulted during the compilation of assignments:

Adom, D (2016). The philosophical epistemologies of Asante proverbs in Ghana's biodiversity conservation. *Journal of Environment and Earth Science*, 6(7): 129 – 136.

Andiswa Mvanyashe (2019). IsiXhosa Proverbs and Idioms as a Reflection of Indigenous Knowledge Systems and an Education Tool. *Southern African Journal for Folklore Studies*, 29(2). #5615, 14 pages. <https://doi.org/10.25159/2663-6697/5615>

Chibvongodze, DT (2016). Ubuntu is not only about the human: An analysis of the role of African philosophy and ethics in environment management. *Journal of Human Ecology*, 53(2): 157 – 166.

Kanene, K.M (2016) Indigenous practices of environmental sustainability in the Tonga community of southern Zambia. *Jàmbá: Journal of Disaster Risk Studies* 8(1), a331, p. 1 – 7. <http://dx.doi.org/10.4102/jamba.v8i1.331>

Shava, S & Manyike, TV (2018). The decolonial role of African indigenous languages and indigenous knowledges in formal education processes. *Indilinga African Journal of Indigenous Knowledge Systems*, 17(1): 36 – 52.

Shava, S (2018). Introduction to environmental education – Tutorial Letter for IED1501 (The Only Study Guide for IED1501). Pretoria: University of South Africa.

## 14 IN CLOSING

We wish you the best in your studies and sincerely trust that you find this module enjoyable and informative.

Regards

*Dr H Hebe and Prof S Shava*

## 15 ADDENDUM

### LITERATURE EXCERPTS

#### Excerpt 1

#### **THE DECOLONIAL ROLE OF AFRICAN INDIGENOUS LANGUAGES AND INDIGENOUS KNOWLEDGES IN FORMAL EDUCATION PROCESSES**

**Soul Shava and Tintswalo V Manyike**

#### **ABSTRACT**

Educational achievement is highly dependent on a learner's ability to access and display knowledge through the spoken or written word. In multilingual classrooms, particularly where the language of teaching and learning is different from the home language of most learners, learners operate in linguistic and cultural backgrounds different from their own. This article explores the past, present and future role of indigenous languages their associated (indigenous) knowledges in formal and informal education processes against the hegemony of colonially imposed Western languages. There is a need to interrogate the source of the Eurocentric language and knowledge hegemony and its implications. We argue in this article that the school has served as an instrument of colonial processes of Western language and knowledge hegemony. The article proposes a transformative decolonial education process in which African schools recognise and embrace the value of indigenous languages and their associated knowledges that will be beneficial to indigenous learners and their communities.

**Keywords:** indigenous knowledges, indigenous languages, language of teaching and learning, colonial hegemony, epistemological access.

#### **INTRODUCTION**

Indigenous knowledges refer to the knowledges of indigenous peoples across the globe. Key aspects of indigenous knowledge are people (indigenous peoples), context (spatio-temporal), culture, language, knowledge, practices and dynamism (Shava, 2013). Indigenous people (the knowers) are creators of indigenous knowledge; they give it discourse and meaning based on, and relating to, their experiences in interactions with their environment (the known) over time. The accumulated knowledge that indigenous people generate is embedded in their culture and embodied in their practices. It is mobile knowledge carried in or by indigenous people that can reside both within and without their lived context (hence the existence of "urban indigenes" – individuals who are able to maintain their indigenous identity and attachment to a particular locality while being geographically distant from that place). This knowledge is trans-generational, transmitted from generation to generation orally (through narratives, stories or folklore, songs and poetry), visually (through arts, such as "bushmen" paintings, writings, craft, cultural rituals

and dance), practically (through doing and the artefacts associated with practice) and spiritually (through dreams and visions from the ancestors).

Indigenesness has a strong connection to land, memory and history. Place or location gives indigenous people their identity and sense of belonging, as well as the knowledge derived from their intimate relationship with their lived environment (local ecology (fauna, flora) and topography). Because indigenous knowledge systems derive from different locales or places and different communities, they cannot be grouped as a singular collective or single entity under the commonly used unifying term “indigenous knowledge”. Rather, they are plurally definable as heterogeneous bodies of knowledge or “indigenous knowledges”.

Although rooted in history, indigenous knowledges are reflexive to changes over time in the lived environment and due to external influences, contacts and interactions. They should not be rigidly held and perceived, rather analysed to reveal the emergent processes of natural evolution of knowledge. This means indigenous knowledges are not static, stagnant, or closed systems, but rather open, dynamic systems being transformed, created and recreated in context (Dei et al., 2002; Masuku, 1999; Masuku Van Damme & Neluvhalani, 2004; Pottier, Bicker & Sillitoe, 2003; Shava, 2000, 2009, 2013). In other words, there are both stable and transforming aspects within indigenous knowledges. The dynamism of indigenous knowledges enables indigenous people to adapt to and survive the risks and uncertainties of their lived environment.

Language plays a significant role as a medium of communication and a conveyor of people’s knowledge, practices and culture. Language provides specific identity to the aforementioned aspects of indigeneity and is therefore inseparable from them (the primacy of language in articulating indigenous knowledge, practice and culture). Indigenous languages capture and transmit the knowledge and wisdom of indigenous communities through stories, proverbs, folktales, myths, poetry and songs that convey meanings about individuals, society, culture and nature interactions. However, within the context of Southern Africa, the hegemony of colonially imposed languages (English, Portuguese, French) as the language of education and commerce has had a negative impact on the role of indigenous languages and their perception by indigenous people, especially in the modern world of work and in the academy (school and higher education). Language has also been used to maintain relations of dominance of whites over the indigenous black populations (Benjamin, 2003) in Southern Africa and as a divisive tool for separating indigenous groups based on their language differences. The dominant Western languages have been used to symbolise power in the political sphere and valid knowledge in the academic arena, where Western science regards all other knowledges as unscientific (Rahman, 1998). The inequalities that have been embedded in the social use of (dominant) languages have had direct negative implications on the value of indigenous languages and associated indigenous knowledges.

Southern Africa is linguistically diverse and mainly characterised by Bantu-speaking peoples (with the exception of languages of the hunter-gather communities such as the San and Khoi) whose languages share similar roots, indicating a common ancestral origin (Alexander, 2004). These indigenous languages transmit many aspects of local peoples' knowledges and practices and have played a significant role in the development of local communities in the past in various areas including agriculture (plant and animal husbandry), medicine, craft ware, technology, natural resource utilisation and conservation as well as governance. However, colonialism has had the lasting impact of denigrating, devaluing and excluding indigenous languages in core social, economic, educational and political domains.

This article argues for the important role those indigenous languages and their associated knowledges (can) play in enabling epistemological access for indigenous learners. The cases presented below are drawn from indigenous researchers that explore the application of indigenous knowledges in formal education contexts, thereby breaking the limitations of the singular hegemonic Eurocentric epistemology that pervades the formal education processes in Southern Africa. By including indigenous languages and knowledges, they provide a pluri-epistemological, contextualised and decolonial learning space.

## **RESEARCH APPROACH**

As indigenous scholars, we draw upon decolonial theories influenced by the work of Dei (2002), Santos (2007), Mignolo (2007, 2011) and Maldonado-Torres (2007, 2011). We are critical of the hegemony of Western epistemology and its exclusion of indigenous epistemologies in formal education contexts. Our locus of enunciation is our indigenous background and the socio-ecological contexts from which indigenous learners emanate. Decolonial thinking emphasises the geopolitics of language and knowledge hegemony. It emphasises how modern Western thought makes invisible, irrelevant, non-existent and inferior any non-Western (indigenous) knowledges that are generated outside the locality of the west (in "former" colonial territories) and Western disciplines; what Santos (2007) refers to as "abyssal thinking". Such abyssal thinking becomes entrenched and normalised through systems and structures of coloniality that continue to govern knowledge (generation and dissemination), power relations and being (racial identity of them and the "other"). Decolonial thinking aims to interrogate, problematise and rupture coloniality's normalised and taken-for-granted relations of knowledge power and being, paving way for the equitable representation alternative knowledges and identities.

A multiple case study approach is used to present different scenarios of indigenous language exclusions in Southern Africa and possibilities of indigenous language inclusions. Case studies are bounded systems and case study design focuses on selected phenomenon studied in real-life contexts (Creswell, 2007); in this case, the exclusion or inclusion of indigenous languages on formal education processes. The article is based on cases of selected auto-ethnographic experiences (Reed-Danahay, 1997) of the authors

and selected literature review of other indigenous researchers working with indigenous knowledge systems in Southern Africa. The basis for the selection of cases was the experiences of the indigenous authors and researchers of barriers to epistemological access to learners due to the use of English (which is a foreign language to indigenous learners) as a language of teaching and learning as well as the teaching of decontextualised Western epistemologies that were presented as neutral and universal. The main emphasis in the case studies was to draw upon experiences of indigenous researchers and learners of formal education processes in Southern Africa.

## **EXPERIENCES OF INDIGENOUS LANGUAGE EXCLUSIONS IN FORMAL EDUCATION CONTEXTS**

A key player in the exclusion of indigenous languages and associated indigenous knowledges has been, and still is, the dominance of a colonially derived or Western formal education system that continues to privilege foreign languages and decontextualised knowledges in the Global South (Dei, 2002; Nyamjoh, 2012; Shava, 2016). Formal education makes a direct assault on indigeneity through processes of exclusion and misrepresentation of indigenous peoples' epistemologies, cultures, practices and lived experiences (Smith, 1999; Shava, 2009). Modern schools hardly reflect the cultural values and traditions of the local indigenous communities (Dei, 2014). Some experiences of the exclusion of indigenous languages and knowledges in the academy are discussed below.

### **Case 1: Using the medal system to force indigenous learners to speak English**

During the first author's colonial schooling days, the system forced them to discard their indigenous languages as the medium of communication as soon as they entered school. The medium of communication in the school was English, which the learners were unfamiliar with. The main aim of this enforcement was for us to become proficient in speaking English. Various punitive measures existed, such as the vernacular medal system in which class monitors and prefects would give the medal to the first victim in the class who was found to be speaking in local languages. This individual would then have the burden of passing on the medal to the next victim and the process continued until the last persons to be found possessing the medal at the end of the day will be booked down for punishment. Besides imposing the speaking of English among indigenous learners, the medal system also served to silence the voices of learners that were not proficient in English in both the classroom context and on the school premises, as well as to exclude the indigenous knowledges that are articulated by their indigenous languages. English was used to replace local languages. It thereby invalidated them and attempted to erase the bodies of knowledge associated with them in formal education processes. Similar accounts of decontextualising language experiences on encounters with the westernised education system are given by Semali on Tanzania (1999) and Nyamjoh on Malawi (2012).

Semali (1999: 9) outlines his struggles with the schooling system in the following passage:

Then I went to school, a colonial school... My struggle began at a very early age constantly trying to find parallels in my culture with what was being taught in the classroom. In school we followed the British colonial syllabus. The books we read in class had been written by Mrs. Bryce, mostly adapted, and translated into Kiswahili from British curricula. We read stories and sung songs about having tea in an English garden, taking a ride on the train, sailing in the open seas and walking the streets of town. These were, unfortunately, stories far removed from our life experiences.

Semali was alluding to the decontextualising effect of modern schooling – “then I went to school” – that ruptured the contextualised learning processes in his lived experiences through language and the irrelevance of the acquired knowledge to his lived context. The school taught him more about Europe than about his country and the education was therefore irrelevant to his lived context. Language provides access to epistemology because language embodies (is loaded with) epistemology. It is important for indigenous learners to value their language and knowledge and see their application in formal education processes. Indigenous languages and related indigenous knowledges are an essential component of the identity of indigenous peoples. Foreign languages that are privileged as the language of teaching and learning have negative implications on epistemological access and academic performance of indigenous learners (Shava, 2016) and contribute to the continued marginalisation of indigenous languages in formal education contexts. Phillips (1992, 1996) refers to the privileging of foreign languages as the language of knowledge transmission as linguistic imperialism.

Linked to the imposed use of dominant Western languages was the general insistence by teachers that learners use European or Christian names instead of their indigenous African names (Cekiso, 2016; Dhliwayo, 2016). This also served to undermine their cultural backgrounds and their indigenous identity. Those without European names were given these names by their teachers. Education for most of these black learners meant a change in name, indigenous religious practices, which were ancestral worshipping and embracing Western culture and values which these schools represented. This cultural mismatch between the home and the school also played a role in alienating black learners. It also implied that only those who will be proficient enough in the medium of instruction had the opportunity to succeed academically (Alexander, 2004). The use of indigenous languages to teach less prestigious subjects such as Life Orientation and Religious Education resulted in further denigrating these languages.

## **Case 2: Teaching botany to indigenous students**

One of the authors worked as an environmental educator at the National Herbarium and Botanic Garden in Zimbabwe. The educational activities at the botanical institute included taking groups of learners on educational tours (guided walks) of the botanic garden. In these educational tours, the author noticed how an emphasis on botanical names and

terminology as well as ecological discourse tended to remain decontextualised to the students, more so for those from rural contexts (Shava, 2009). They were alienated and unfamiliar to the language and disciplinary discourse of botany as well as the “scientific” ways of identifying plants. This was despite the fact that most of these plants were indigenous plants located within their own home contexts. Modern botany thus replaced local epistemes (that is the meaningful local indigenous plant taxonomy or names and the knowledge associated with them) with universalised scientific names known only to those exposed and familiar to its disciplinary discourse. This reveals the use of modern science and its related foreign language as a tool for epistemological dominance that excludes and invalidates local indigenous taxonomic and ecological knowledge and practices.

### **Case 3: Teaching science to indigenous student teachers**

While teaching Science concepts to Zimbabwean and Namibian teachers in training (student teachers) for secondary schools, Mandikonza (2007) noted that the African students often struggled to apply the scientific concepts in their practical work during teaching. They also failed to teach conventional science in ways that are relevant to the learners and the learners’ communities. This was mainly because the student teachers could not visualise the application of these scientific concepts from physics, chemistry and biology in their everyday real-life contexts. This reveals the disjuncture created by formal education processes between the lived life of the learners and their formal learning.

### **Case 4: Indigenous primary school learners transitioning from the junior phase to the intermediate learning phase**

The South African education system continuous to transit learners to English as a medium of instruction, disadvantaging especially those learners who are located in rural and township schools who have had very little exposure to English in their lived environments (Van Rooy & Pretorius, 2013). This is despite the language policy in education which gives learners rights to be educated in the languages of their choice (Republic of South Africa, 196). As a result, most of the South African learners continue to experience academic failure (Manyike & Lemmer, 2012).

In the 500 Schools project for South Africa aimed at improving learner performance in underperforming schools, one common finding was that learners struggled in the transition from junior phase, Grades R to 3, to the intermediate phase, Grades 4 to 6 (500 School Project, 2014). This was mainly attributed to the fact that while learners were taught in their home language in the junior phase, they were shifted to English as the language of instruction in the intermediate phase, thereby creating a disjuncture between the phases.

### **Case 5: Indigenous heritage knowledge and innovations**

O'Donoghue, Shava and Zazu (2014) realised that most heritage discourses and innovations in Southern Africa focused on Western heritage and modern or Western innovations. In the process, indigenous heritage (which is largely intangible) and

indigenous innovations in water conservation, energy, health, agriculture, biodiversity conservation, waste management and climate change adaptation were marginalised and excluded. This is despite that these heritages and innovations could make a significant contribution to formal education processes across these different fields.

## **THE IMPACTS OF INDIGENOUS LANGUAGE EXCLUSIONS IN FORMAL EDUCATION CONTEXTS**

Behind the “progressive” facade of the modern school lies the harsh reality of a hegemonic colonial machinery at work. The school has served as a place of isolation and disconnection from the home (and the community) and of denial or removal of indigenous identity by banishing the use of indigenous languages and the knowledges associated with it. It was a site of eradication of indigenous identity and estrangement from indigenous geographic location through decontextualization of knowledge and by imposing a language of formal knowledge that was different from the language used at home, thereby stereotyping indigenous languages as inferior. Schooling has therefore served as an instrument of symbolic violence in the colonial process of dispossessing indigenous learners of their indigenous language, culture, values, practices and knowledge, erasing any reference to the indigenous context. Western education also denies the indigenous learners the possibility of bringing into the classroom their own indigenous knowledges and experiences. This has contributed significantly to the erosion of the value of indigenous knowledges as their unique heritage and loss of pride in their indigenous identity. In support of this argument, Lizop (2003: 157) states that:

As soon as a school is opened, it creates around itself a zone of cultural depression, as it were. Ask an African school teacher what the cultural resources of his village are. He will answer: the school – and nothing else... Maybe the missionary, but often because he too is imported. But the market, the palaver tree, the dance, the song, the language of the tam-tam, the tales and the proverbs, the historical and legendary stories, the potter, the blacksmith, the weaver are not for him source of culture. School acts as an instrument of humiliation. It establishes its empire upon the destruction of whatever it is not, whereas its mission should be to reveal to everyone all the riches and gifts they represent.

Lizop points to how teachers in schools turn a blind eye to the educational resources that exist in the local community in which they and their learners come from. In so doing, they deny the community of playing a role in their learners’ education.

Odora Hoppers (2001: 75) similarly observes that:

More like the proverbial blind, deaf and dumb torchbearer trampling on everything in its path, the school’s awkward presence is also felt in terms of the value patterns, norms and modes of social and economic relations that it chooses to impart. Thus, every time a child enters the gates of the school, the spontaneous process of that symbolic fumigation, cosmological cleansing and mandated acculturation begins. In fact, as teachers

determinedly pursue the orderly dispensing of the knowledge and information they have acquired during their years of training, and unknown to them, or perhaps unwittingly, they begin to participate in the collective but subconscious process of subjugating local indigenous values and suppressing the authentic cosmologies of the very context within which the school is located. They begin the process of preparing the learners for a one-way conveyor belt that moves outwards, westwards in a journey of no return...

Odora Hoppers alludes to how teachers become contributors to (post)colonial processes of epistemic violence (epistemological exclusion) in the academy by (knowingly or unknowingly) systematically undermining and denigrating the value of indigenous knowledges and languages and excluding the learners' local context in formal education processes.

In pointing out the contextual irrelevance of modern schooling, Handerson (1991: 16) recounted a story about an Iroquoian Indian youth who had received the so-called best of formal education of the times but were good for nothing when they came back to their community as they could not "hunt or lead ceremonies and they did not know their duties within the family and community or their responsibilities to the land". In concurrence with the above authors on the effects of colonially derived education systems, Nyamnjoh (2012: 1) states that:

In Africa, the colonial conquest of Africans body, mind and soul has led to real or attempted epistemicide, the decimation or near complete killing and replacement of endogenous epistemologies with the epistemological paradigm of the conqueror.

Nyamnjoh (2012: 1) argues that "education has become a compulsion for Africans to 'lighten their darkness' both physically and metaphorically in the interest of and for the gratification of colonizing and hegemonic others". He points to how formal education creates cultural estrangement rather cultural engagement of African people with their own African origins. Nyamnjoh (2012: 2) further argues that "the production, positioning and consumption of knowledge is far from a neutral, objective and disinterested process". This alludes to the subverted hegemonic (neo)colonial agenda of Western derived education. Nyamnjoh (2012: 10) describes how the school uproots learners from their communities and nurtures them "like potted plants in greenhouses".

Even in the post-independence era, the negative impacts of colonial language hegemony over indigenous languages are still dominant in the academy and in the key sectors of society. In concurrence with this argument, Dei (2014) notes that while other country leaders take pride in speaking their home languages and having them translated in international meetings despite their knowledge and ability to speak fluently in English, only leaders from African countries opt to speak in English and other foreign coloniser languages other than their own indigenous home languages. This reflects the extent to which they undermine the value of their own languages in the international arena, indicating the existence of post-modern imperialism.

## **POSSIBILITIES FOR THE INCLUSION OF INDIGENOUS LANGUAGES AND ASSOCIATED INDIGENOUS KNOWLEDGES IN THE ACADEMY**

Indigenous languages play a pivotal role in the survival of indigenous cultures, knowledges and practices. Barman et al. (1986: 150) expound on this in stating that:

The key to the future of any society lies in the transmission of its culture and worldview to succeeding generations. The socialisation of learners, through education, shapes all aspects of identity, instilling knowledge of the group's language, history, traditions, behaviour and spiritual beliefs. It is for this reason that aboriginal people have placed such a high priority on regaining control over the education of their learners.

For indigenous peoples, indigenous languages are both a right and a resource. Languages embody the culture, knowledge and associated practices of any group of people. Indigenous languages therefore serve as the main medium through which indigenous knowledges are transmitted from generation to generation (Shava, 2013). They are important for enabling epistemological access for indigenous scholars in formal education processes and for the perpetuation of indigenous knowledges.

In a similar vein, Opoku (1999: 43) laments that:

There is a tendency among many Africans who have formal schooling, as well as many foreigners, to think that those Africans who have not been to school and who usually live in the villages are ignorant and that those who are “educated”, in the modern sense of the word, possess real and worthwhile knowledge. But such thinking is wrong, for there is knowledge which is not necessarily acquired in the classroom. Besides, our schools in Africa tend to make us ignorant of the knowledge which is the basis of the way life of our respective societies, and the reason we go to school is to learn how others live, not how we live.

Modern education and other factors have combined to push this (indigenous) knowledge into the background. Besides, many people in the rural areas have been made to feel traditional knowledge and techniques are in many respects backward, “unscientific”, and certainly out of touch with the “modern” world. Such people, therefore, are usually reluctant to disclose information concerning their methods, techniques, and attitudes. But this knowledge base is very much alive and continues to inform many of our people. And, by taking the life of our people seriously and respecting it well enough to study it, we can come to an appreciation of this knowledge and recognise the inescapable role it plays in our efforts at genuine development. This knowledge may be likened to a thumb without which one cannot tie a knot, as our ancestors said: “Obi nkwati kokrobeti mmo pow” – one cannot tie a knot without the thumb.

Opoku (1999) places emphasis here on the need for education to be relevant to the immediate society of learners; to go beyond the enclosed classroom and the individual to

engage the community context and realise the possible role local community knowledge and expertise can play in education and development. Opoku is also alluding to the importance of re-looking into indigenous local community contexts as a source of knowledge generation.

Below are some examples that demonstrate the possibilities of including indigenous languages and indigenous knowledges in formal and informal education contexts.

### **Case 1: The language medal system**

While the vernacular language medal worked as an imposed system within the school context, it was ineffective outside the school context. However, as soon as we left the school and entered the informal domain, we reverted to our indigenous languages and spoke them with impunity. This was both an act of resistance to imposed language and a means of reaffirming our pride in our indigenous identity.

The continuous use of English as the only medium of instruction in education has done little to improve proficiency in the language and resulted in huge financial loss due to huge dropout rates, high failure rates as well as low literacy rates in South Africa (Desai, 2008). The gains among the few who managed to acquire the English language proficiency skills, and as such became professionals, does little to alter the situation. Most of these professionals fail to plough back into their communities, as some of them appear to have become misfits in their communities (Desai, 2008).

However, if an opportunity had been provided for multilingualism (the learning and expression of local indigenous languages and English) within the school context, this would have instilled in the learners a sense of pride in their own indigenous languages while at the same time they were appreciating learning a foreign language. Notably, some non-European and non-American countries that value their own indigenous languages and utilise them in their education systems, such as China, Japan, India and Korea, have made huge progress in their economic development, some of them surpassing both Europe and America. This is because learning indigenous languages enables them epistemological access in that they can relate to both the language, content and the context of teaching and learning.

### **Case 2: Teaching botany to indigenous learners**

In the case of decontextualised learning processes in the botanic garden, the author's inclusion of local or indigenous plant names and uses brought the ensuing discussions back into context for the students by establishing the people-plants connection that they were familiar to in their lived environments. This process revealed that the indigenous students had considerable knowledge about indigenous local plant taxonomy, use and ecology in their own socio-cultural contexts.

The learners, like many indigenous people in rural communities, could distinguish between very similar and usually closely related species. For example, they could distinguish three

edible species of *Strychnos* in Zimbabwe in their local language (Shona): mutamba-muzhinyu (*Strychnos cocculoides*), mutamba-mun'ono (*Strychnos spinosa*) and mutamba-usiku (*Strychnos pungens*). They could also differentiate between very similar looking leguminous trees, musasa (*Brachystegia specicormis*) and munhondo (*Julbernardia globiflora*) (Shava, 2009). This reveals that, embodied within the language of the indigenous learners is their indigenous epistemology, in this case the knowledge of botany.

The (re)contextualisation process also established a bridge between the modern or Western science that the students were learning in formal education institutions and local community knowledge that they grew up with, thus making botany and ecology more accessible and relevant to their local contexts. Enabling epistemological access through use of indigenous languages and knowledge is very important in the understanding of abstract and decontextualised scientific concepts through relating them to the lived context of the learners (Shava, 2016). Masuku Van Damme and Neluvhalani (2004: 368) point to the need for engagement of Western and indigenous knowledge in the following argument:

As schools and other educational institutions are institutions of the modern state, situated within communities in which learners' homes and everyday life experiences are based, we argue that the two should engage one another in generative and relational ways that shape ways of knowing that do not create "schizophrenic citizens" who find no room for what they learn at school in their homes and vice versa.

### **Case 3: Teaching African student teachers to understand scientific concepts**

In working with the African student teachers to help them understand scientific concepts, Mandikonza sought to establish how student teachers' experiences with indigenous knowledge practices might be used in order to make teaching of science more relevant and meaningful to the secondary school learners they teach. Mandikonza decided to introduce some indigenous knowledge practices that could be scientifically explained which he had observed in his rural home context, such as traditional grain winnowing, grain storage and milk fermentation processes, which could be employed in teaching air currents (wind movement) in physics, biological pest control and the biological and chemical processes in fermentation, respectively. In so doing, he sought to explore how student teachers could relate local knowledge and experience to the body of theory and practice in science learning.

Findings from Mandikonza's study revealed that rural communities are a repository of diverse indigenous knowledge practices that are relevant to science teaching and learning in formal education contexts. In their engagement with the chosen indigenous practices, student teachers demonstrated that they had prior knowledge of both indigenous knowledge practices and scientific concepts when they come to class. They engaged with the given traditional practices in their own languages and even came up with alternatives of similar practices from their different cultures. Moreover, the student teachers were able

to relate indigenous knowledge practices to scientific concepts in ways that have the potential to enhance the learning of science in rural school contexts that usually lack laboratories and science equipment (Mandikonza, 2007). This paves way for teaching scientific knowledge relevant to the local context of the learners. Such a process brings out the value of reciprocal valorisation of the different knowledges (Western and indigenous) in formal education processes (Odora Hoppers, 2001), thereby forging necessary linkages between them and dispelling the claim of Western science as universal knowledge system.

#### **Case 4: Indigenous learners transitioning from the junior phase to the intermediate phase**

Similarly, the observed disjuncture in learners' transition from junior to senior phase in South African schools was due to the dropping of the home language as the language of instruction and replacing it with English (Macdonald, 1990). However, this points to the need to continue instruction by making reference to the local languages and local context or the process of code-switching (using both the local and foreign language) enabling learners to master English as well as their own home language. Multilingualism is an everyday reality in most African contexts. Most indigenous African people speak at the least two languages (their mother tongue and the language of the coloniser). Language pluralism (code switching) can be a useful tool to aid learning within formal education contexts. Besides language, it is important to engage learners in educational processes that draw upon their prior knowledge acquired from and in relation to their home (lived) context.

The use of multilingualism in education will result in learners succeeding academically who also have a good grounding of their own culture and identity. These learners will be proud of who they are and will be in a position to save their communities as there is a close relationship between language and culture. Language research (Macdonald, 1990; 2012, Manyike, 2014; Heugh, 2014; Cummins, Mirza & Stilles, 2012) reveal that first language education is beneficial to the learners and that the skills learned in first language such as the reading, writing, making summaries and critical analysis are transferred to learning a second language. According to Cummins et al. (2012) for this to be realised, a certain threshold should be reached. However, learners in African countries are not reaching the desired threshold in their indigenous languages to benefit them in learning a second language. Most of these learners are changed to English-medium instruction too soon. Further to this, another major challenge in teaching indigenous languages lies in the fact that the methods used to teach these languages have been imported from elsewhere in the world.

Nyamnjoh (2012) observes that only a few African countries have bothered to implement policies that encourage education in African languages and those that have confined these languages to adult literacy and primary and secondary education and not tertiary education.

## **Case 5: Indigenous Innovations**

O'Donoghue, Shava and Zazu (2014) documented useful indigenous innovations in Africa that constitute the heritage of indigenous peoples of the continent. The indigenous innovative practices – ranging from water conservation through environmental management, health provision, sustainable agriculture, biodiversity conservation to climate change adaptation – reflect the inherent capacity of indigenous people to cope with their local environment and to adapt to its related changes (dynamism). In this publication, emphasis was given on the primacy of indigenous language and terminologies in endowing meaning to the knowledge and practices of indigenous peoples.

The indigenous heritage innovations documented in this publication (O'Donoghue, Shava & Zazu, 2014) are scientific and have application in the everyday livelihoods of the indigenous peoples. They are also sustainable practices that should be encouraged and promoted in the broader public, especially against a background of increasing global environmental crises due to unsustainable human activities.

## **CONCLUSION**

### **Decolonising languages, decolonising knowledges**

The fact that indigenous languages and their related knowledges persist today is evidence of indigenous peoples' sustained resistance to colonial domination which currently persists in subtler forms, including language and epistemological hegemony. This posits indigenous peoples as emerging victors rather than victims of colonial processes and their effects. They are a living critique of dominant languages and their epistemologies.

The five cases discussed above demonstrate how indigenous languages and knowledges can play a pivotal role in enabling epistemological access for indigenous learners. They do this by (re)contextualising learning processes to enable indigenous learners to relate associate scientific concepts with aspects in their lived socio-ecological context (everyday life).

It should be noted that inclusion of indigenous languages and indigenous knowledges in the academy does not mean their mere symbolic accommodation in the academy. Rather, their representation is a political process of academic decolonisation and indigenous resistance. It requires the continuous agency of affirming of their validity and contribution to formal education processes by confronting (critically engaging with) a colonially derived system that has been created to exclude them and hierarchically accord them low value through a skewed application of standards and technologies of domination.

Decolonising languages and knowledges in the academy is a continuous counter hegemonic process that challenges the status quo by subverting hierarchical colonial relations of conventional schooling, paving way for African indigenous epistemologies and the recognition of plural epistemologies. Academic decolonisation is “re-envisioning

schooling and education espousing at the centre values such as social justice, equity, inclusion, fairness, resistance and anti-colonial responsibility” (Dei, 2014). We need to be asking questions as to what sort of education should be happening in African schools and what sort of knowledge should be taught? There is a need to reconnect our learners with their indigenous social and natural environments, to re-contextualise learning by connecting the school to the home and lived context of the learner. This requires the diversification of our curricula to include multiple (including indigenous) languages, indigenous epistemologies, indigenous teaching approaches, pedagogies and methodologies.

***Extracted from:***

**S Shava S & Manyike, TV (2018).** The decolonial role of African indigenous languages and indigenous knowledges in formal education processes. *Indilinga African Journal of Indigenous Knowledge Systems*, 17(1): 36 – 52.

Excerpt 2

**Ubuntu is Not Only about the Human! An Analysis of the Role of African Philosophy and Ethics in Environment Management**

**Danford T. Chibvongodze**

**The ‘Ethos’ of African Conservation and Indigenous Knowledge Systems**

African indigenous knowledge systems have been critical in rationalising environmental conservation as part of Africans’ collective identity and morality. To achieve this end, they conveniently utilise cultural beliefs and norms embedded in taboos, totems and proverbs to promote human tolerance towards plants, animals, mountains and rivers. While Western philosophies on environmental conservation, such as that of Kant, promotes an individualistic moral obligation to conserve non-humans, African philosophy encourages a collective sense of responsibility to conservation. Indeed, the practice of meshing animal identities with that of clan names which creates a sense of human/animal similitudes encourages a communal commitment to conservation of animals (Galaty 2014). It is perhaps necessary for this paper to provide specific examples of how clan names in Zimbabwe are used to avert the depopulation of wildlife.

***Clan Names***

In the African context, clan names sometimes referred to as “totems” represent the history and origins of a clan (Shoko 2007). In most instances, the clan’s name can be used to indicate the ethnicity to which one belongs; thus, it informs one’s identity (Lindgren 2004). Clan names play an essential role in African religion, as they are used to conjure and communicate with the spirits of the dead during rituals (Opland 1998). In many parts of

Zimbabwe, the name of a clan is derived from the identities and mannerisms of wild animals. This sharing of clan names with animals stimulates a sense of affinity between

the people and wild animals, such that the personal and social identities of individuals become signified by a certain type of an animal (Galaty 2014). It is common among the Shona ethnic group of Zimbabwe to name their clans after animals. Shoko mentions some of the clan names which are *Mhofu* (Eland), *Samanyanga* (Elephant), *Simboti* (Leopard) *Shumba* (Lion), *Dube* (Zebra), *Hungwe* (African fish eagle), *Hove* (Fish), *Soko* (Monkey) and so on (Shoko 2007). The Shona custom follows that it is the collective duty of the clan bearing the name of the animal to keep that animal from harm and extinction. The Shona people like many other African ethnic groups construe the harming or disappearing of the animal as having a similar effect to their clan's name (MacGonagle 2007). If the animal is edible, the clan that carries the name of such an animal are forbidden to consume it. The Shona people believe that consuming one's totem may result in loss of teeth and may also invite bad luck (MacGonagle 2007). The identification of clans and totems through wild animals allow humans to convey some degree of respect to the animals. This respect for animals may result in wildlife conservation. The naming of clans or totems after animals permits humans to transmit their humanness and personhood to animals, while the animals bring the identity of the African into being (Galaty 2014).

### **Proverbs**

The African humanity is as old as its proverbs and folktales. Proverbs are a necessary form of indigenous knowledge for addressing some of the moral and ethical challenges facing modern African societies. As such, they occupy an important space in finding possible solutions to reducing environmental degradation since they provide a platform for problem solving, raising awareness and moral guidance in an entertaining and invigorating manner (Malunga 2011). There are a number of Ndebele and Shona proverbs that speak directly to environmental ethics and conservation. The Ndebele proverb "*ihloka liyakhohlwa kodwa isihlahla asikhohlwa*" (an axe forgets but the tree does not forget), although used to discourage ill-treatment of a fellow human being by another, it reveals the empathy the Ndebele people have towards trees. This proverb also resonates with the Zulu proverb "*isihlahla asinyelelwa*" (a tree is not defecated upon). While the proverb in question is used to encourage people to be contented what they have, it also calls for the same people to show dignity and respect for trees.

Furthermore, the Ndebele proverb "*inkomo kayisengwa ngokwehlisa*" (do not continuously milk a cow until there is nothing to milk) is used in a context where one shuns exploitative and selfish behaviours that put fellow human beings at a disadvantage. For Ndlovu and Ncube, the aforementioned proverb shows how the Ndebele people despise an individual that...milks a cow until it runs dry, forgetting that a calf survives on the same milk" (Ndlovu and Ncube 2014). The compassion that is given to both the cow and the calf leads to the realisation that *ubuntu* is not only extended to humans but further to animals.

The Shona people also have proverbs that raise awareness on the depletion of environmental resources. The proverb “*aiva madziva ava mazambuko*” (what used to be pools are now crossings) goes a long way in sensitising people about disappearing water bodies in a planet where climate is constantly changing. This proverb challenges the misconceptions created by modern knowledge systems that local communities are not aware and care less about the depletion of environmental resources. It further reveals that Africans have an intimate relationship with the environment and observe its changes.

### **Taboos**

The term “taboo” is derived from the Polynesians’ culture and concept of *tapu*, which means ban or prohibit (Colding and Folke 2001). The concise Oxford Dictionary defines a taboo as a “social or religious custom placing prohibition or restriction on a particular thing or person (South African Oxford Concise Dictionary). Colding and Folke (2001) identify six typologies of taboos, each serving a specific conservation purpose, these include: *segment taboos* (they regulate resource withdrawal); *temporal taboos* (they regulate access to resource in time); *method taboos* (regulate method of resource withdrawal); *life history taboos* (regulate withdrawal of vulnerable life history stages of species); *specific-species taboos* (total protection to species in time and space); and *habitat taboos* (restrict access and use of resources in time and space).

Segment taboos are vital in environmental conservation as they prohibit the utilisation and consumption of specific species for a certain period of time by persons belonging to a particular sex, gender and age (Bobo et al. 2014). These types of taboos are commonly encoded to cultural norms and social values prevailing in specific ethnic groups. For instance, the *Aka Pygmies* of Central Africa Republic disallow married couples and pregnant women to consume mushrooms, while children are forbidden from eating the white-bellied duiker (Colding and Folke 2001).

Similarly, inhabitants of the Fianarantsoa rain forests in Madagascar proscribe pregnant women from eating cray fish and freshwater crabs as it is believed that the consumption of these aquatic species leads to miscarriage (Jones et al. 2008). The temporal taboos permit humans to have access to natural resources at specific periods, days, months, or weeks. In most rural communities of Zimbabwe, there is a specific day on which hunting, fishing and the collection of firewood or wild plants are restricted.

The method taboo, on the one hand, restricts people from using certain hunting, fishing, or farming methods that may lead to a rapid depletion of natural life. An example of a method taboo is the ban of drawing fish nets by the fishing communities of *Tema* and *Tesie* living at the Sakumo lagoon in Ghana (Ntiama-Baidu 1991). The abovementioned taboos help in reducing hunting and harvesting pressures on plants and wildlife.

On the other hand, life history and specific-species taboos place a restriction on the use or hunting of species that are in a certain vulnerable stage of life history based on age, sex and reproductive status. For example, the prohibiting of hunting down pregnant and

lactating animals or that of young animals is highly upheld in the *Zulu* culture (Lippe-Biestefeld et al. 2007). Lastly, the habitant taboos are often placed on sacred rivers, pools, forests and mountains in which access to these natural environments by the ordinary community members is barred. The aforementioned taboos are a vital conservation component as they function to ensure a “stock recruitment of species... maintenance of biodiversity and ecological services” (Colding and Folke 2001, p. 159 – 161).

***Extract from:***

**Chibvongodze, DT (2016).** Ubuntu is not only about the human: An analysis of the role of African philosophy and ethics in environment management. *Journal of Human Ecology*, 53(2): 157 – 166.

Excerpt 3

**The Philosophical Epistemologies of Asante Proverbs in Ghana’s Biodiversity Conservation**

**Dickson Adom**

**Introduction**

Proverbs are craftily developed short epigrammatic expressions created by our ingenious forebears enshrined with valuable epistemologies that ensure social cohesion in communities by regulating the moral values of the people handed down from one generation to another generation. Dogbevi (2011) opines that proverbs are the widely used form of traditional oral arts that express summarised and allusive phraseologies with the aim of giving moral instruction. Owing to the fact that proverbs were and are the powerful instrument through which the cultural and societal values of local communities are conveniently transmitted to the younger generations, they are highly esteemed among most Asante communities. Kquofi, Amante and Tabi-Agyei (2013) concur that proverbs are a cardinal figure in the cherished indigenous linguistics of the Akan people which the Asantes constitute a larger part. Proverbs, though they are usually abridged, express profound truths as well as common human experiences (Kaplan, 2002). The absolute truth or wisdom in proverbs offers various moral lessons that assist societal members to demonstrate good traits such as hospitality, goodness, peacefulness, stewardship and accountability, while shunning negative attitudes such as stealing, chaos or disputes, selfishness and so forth (Anderson, 2015).

Unwarranted behaviours are deliberately ridiculed in most of the proverbs making it less enticing for societal members to mimic. Thus, the Asante forebears in their quest to maintain a high ethical code of living endorsed some social norms and behaviours that were relayed to members of the general public through proverbs (Sanauddin, 2015). These relatively short but wise expressions were made known to societal members by the

elders in the community. Old indigenes in the local communities who played dual roles as elders and fathers instructed their wards in their households for them to glean the import or admonishing embedded in the proverbs. Others were fortunate to have deeper comprehensions of these avenues of hegemony by the folk sages or elders at family gatherings, communal meetings and initiation rites where instructions concerning the accepted mode of behaviour were given (Adom, 2011).

It is interesting to know the great impact that these maxims have on societal members! They were highly revered and reckoned by every member of the society due to the deep respect for the old sages or elders these wise sayings issued from. Also, since the elders were viewed as the custodians of the sayings of the deities and ancestors, proverbs were often accepted blindly by members of the society (Rasul, 2015). This explains why the moral behaviours and attitudinal manifestations of the old generations of Asantes were remarkably positive. It was abhorred as Boateng (1998) noticed, among the Asantes, to wantonly destroy the forest, which is a haven for the high taxas of flora and fauna species – the biological diversities that supports life.

It is however sad that these wise sayings, considered by many ethnic societies of the world as “the most ubiquitous genre of folklore”, are gradually losing its grip and relevance in the Ghanaian community (Sanauddin, 2015). This is largely attributed to the influx and pervasiveness of foreign cultural practices. Gbolonyo (2009) posits that the curricula for instructing learners in most educational institutions have been raided with foreign ideologies and the wisdom enshrined in these proverbs have been relegated and even totally abandoned. Storytelling sessions and programmes aired on televisions and radio stations in Ghana that were formerly used as mediums in relaying the good values in these proverbs, such as ‘By the Fireside’, ‘Kyekyekule’ and so on, have now been exchanged with Western fairy tales (Gadzekpo, 2013). Proverbs still hold great wealth in the circles of biodiversity conservation because most of them admonishes on the need to conserve the biological resources in the environment that ensures our survival as humans. Statistics clearly shows a major decline in the biodiversity resources in Ghana which was not formerly the case. Due to the heinous destruction of Ghana’s biodiversity resources, the World Bank’s Water and Sanitation Programme (WBSP) reported that Ghana’s economy loses over GH¢ 42 million every year (Ghana News Agency, 2012). The cause of this depletion of the Ghana’s bioresources is partly as a result of the weak moral values of her citizens. Attuquafio and Fobil (2005) agree that to curb the problem of Ghana’s biodiversity depletion we need to look at changing the behavioural patterns of its citizens. It is true that if the moral fibres of Ghanaian citizens are strengthened, we will be able to salvage the ever-deteriorating state of the country’s biodiversity.

The multi-million question now is “How can we change the behavioural patterns of Ghanaians as far as the destruction of Ghana’s biodiversity is concerned?” The answer gleams in the words of Gadzekpo (2013), who advocated for a renaissance of the wise maxims of our forebears that contains powerful moral values to help regulate the attitudes of Ghanaians towards the biodiversity resources in the environment. The characters in

most of the proverbs propounded by the Asante forebears are flora species and fauna species used metaphorically to instruct societal members on good moral habits. Imageries are often painted to illuminate the peaceful relationship that exists between humans, the environment and its rich resources.

Proverbs often highlight the interdependency relation between man and nature, insisting that humans and nature have also co-existed and depends on each other for survival. This has even given rise to theories like the Human Environment Relations Theory, Cultural Ecology Theory, Historical Ecology Theory and so forth (Milton, 1996; Steward, 1955). Thus, if this peaceful relationship between man and the natural environment is perturbed by the activities of man it would end up affecting his own existence on the earth. Therefore, propagating the wisdom in the wise maxims of the Asante forebears which advocates for a peaceful relation between humans and the environment, frowning on negative attitudes and practices that destroys the biodiversity resources in nature while applauding best conservation practices is certainly a good course to pursue as scholars who are bent in saving our world of the wanton destruction of its biodiversity resources. Awuah-Nyamekye (2013) strongly believes that proverbs are powerful mediums for relaying ecological wisdom for the conservation of the biodiversity resources in the environment, especially in Ghana where proverbs still have high currencies, permeating in every sphere of the lives of her citizens. This probably is what was on the mind of Gadzekpo (2013) who called for a rejuvenation of proverbs, elevating it in our search to correct the abysmal attitude of Ghanaians towards their biotic environment and its rich resources. Local and International agencies and institutions that campaign for the conservation of the biodiversity resources in nature have also recognized the worth of proverbs as an instrument for campaigning against the wanton destruction of the biodiversity resources in the environment. For instance, the United Nations have used the Kikuyu proverb from Kenya that says “Treat our earth well for it was not given to us by our parents; it is lent to us by our children” as the theme for its environmental and conservation programmes. The philosophical content or imports of these proverbs have epistemologies that are laden with conservation values (p. 129 – 130).

***Extract from:***

Adom, D (2016). The philosophical epistemologies of Asante proverbs in Ghana's biodiversity conservation. *Journal of Environment and Earth Science*, 6(7): 129 – 136

Excerpt 4**Indigenous practices of environmental sustainability in the Tonga community of southern Zambia****Kanene K.M****Introduction**

There is a global concern to safeguard the increasingly dilapidating environment (Obiora & Emeka 2015). For example, the United Nations International Strategy for Disaster Reduction (2009) urges that environmental degradation needs to be combated to minimise or eradicate its threats to lessen the limit of the earth to meet social and environmental destinations and needs. Anup (2005) says that, if not urgently addressed, the effects of environmental degradation can demolish the whole environment. Similarly, Kanene (2015) posits that the exploitation of our planet and degradation of our environment have gone up at an alarming rate such that concerted efforts must be applied to enhance environmental sustainability. The above issues require interdisciplinary and multidimensional approaches, which include the use of cultural construct, herein referred to as African indigenous knowledge system (Obiora & Emeka 2015). Ngara (2013) notes that indigenous knowledge is built by societies through generations, living in close contact with nature. This knowledge encompasses norms, a system of classification of natural resources, empirical observations about the local environment and a system of self-management that governs resource use. He further argues that traditional beliefs, cultural mores and practices are significant in the successful conservation of the natural environment. Culture has played a crucial role where environmental resources are under threat. Grenier (1998) adds that indigenous people with historical continuity of resource use practices often possess a broad knowledge base of the behaviour of complex ecological systems in their abilities.

As Lancaster and Vickery (2007) stated, the Tongas are believed to be the first Bantu-speaking people to live in Zambia; they have been living in southern Zambia since AD 1100. In addition, O'Brien and O'Brien (2007) further highlight that the Tongas are prominent agricultural people. They have lived sustainably within their biophysical environment for many centuries (Kaoma 2010). This is despite their being the leading agricultural ethnic group in Zambia (Kanene 2015). Moreover, the United Nations Children's Fund (UNICEF) (2013) has designated the Tongaland as a "No Open defecating Zone" because generally all households possess a toilet or toilets. To this effect, billboards are displayed in all main gateways to this area. Kaoma (2010) further reveals that the Tonga people are amongst the leading promoters of the concept of "going back to Eden". The phrase entails that they more often than not run to herbal medicine for most of their health challenges. However, there is no known study that has been conducted to explore the strategies aiding them to live harmoniously with their environment. Therefore, the aim of this study was to unveil the practices and experiences that have enabled the Tonga people to live sustainably in their local biophysical

environment for several years. The following sections provide some insights from the literature on how aspects of culture have helped conserve the environment in some parts of Africa.

### **Culture and environmental sustainability**

According to Lssozi (2012), African communities have rich environmental cultures which can be understood by listening to their myths, taboos, stories, proverbs and beliefs and also by observing their symbols and rituals. For example, amongst some indigenous African communities, the association of some animals and plants with spirits has enabled environmental sustainability (Forde 1998). Essentially, amongst the Igbos of Nigeria, there are taboos associated with some rivers and forests to safeguard them from pollution, abuse and exploitation (Obiora & Emeka 2015). There is also strict observation of moral

order amongst traditional societies whereby people observe some ecological ethics such as not to defecate near streams where drinking water is fetched. It is believed that contempt to this prohibition attracts severe sanctions from the deity who owns the stream (Obiora & Emeka 2015).

The United Nations Conference on Environment and Development (UNCED, 1992) advocates for the restoration of the ethic of love and respect for the earth in people's lives, which the traditional people have retained as central to their value system. This view is supported by Cooper and Palmer (1998), who say that indigenous people have lived in "oneness" with their environment. These people live within the environment with an attitude of respect guided by their ecological wisdom (Cooper & Palmer 1998). Their sustainability practices are manifested through traditional modes of agriculture, namely, shifting cultivation, mixed farming and agroforestry (Wolfgram 2006).

The Ba'Aka pygmies of Central Africa represent a good case of indigenous people's involvement in environmental sustainability. They are involved in managing flora and fauna in reserves. Their knowledge in conservation greatly contributes to the understanding of the links within the forest ecosystem, hence being invaluable for planning and management purposes (Ayong 2007; Lssozi 2012). They are cautious that few people hunt in one area at the same time for safety reasons; they also respect areas for trapping reserved for them in the forest and avoid the use of guns for hunting to evade gun accidents, which may result when too many hunters act too near to each other in the same forest. Also, gun restriction, minimal trapping of animals during the rainy season and sparing of young animals are meant to allow animal populations to increase. Furthermore, some sections of rivers or streams and forests are considered sacred; therefore, fishing and hunting are forbidden in these areas unless special rituals are to be performed. Also, to ensure harvest of wild nuts and fruits is not damaging to the plants, they grow fruit trees on their farms and around the village. In addition, they control poaching by assigning youth groups to guard the park to regularly monitor and report to village councils about the presence of poachers (Ayong 2007).

The Ba'Aka believe that they do not have to kill their totems for food because the reduction in such animals negatively affects the well-being of the people. It is also believed that hunting down such animals is very difficult and would instigate some misfortunes to the society. In addition, pregnant women should not eat certain types of reptiles, birds and animals because eating them might stop production of breast milk or cause foetal abortions (Chikwanha 2011). In summary, the Ba'Aka case above simply illustrates the existence of viable environmental sustainability strategies amongst indigenous African communities.

### Conservation of animals and birds

An investigation about animals and birds' conservation revealed that all the Tonga people belong to a particular clan. The clan names are associated with either fowls or animals as illustrated in table 1.

Accordingly, the Tonga regard the animal related to their clan as a totem. Both the traditional leaders and the elderly noted that it is taboo for any clan to eat their totem as they are perceived as sacred. Therefore, there is an intimate relationship between the totem and the clan to the extent that the clan does not eat, kill, or trap these animals (Hens 2006). The researcher's observations revealed that they also guard their totem against being killed by other clans who may not consider it as sacred. In the same manner, Mapira (2013) notes that totemism reduced hunting and gathering of some edible fauna and flora. Consequently, one of the largest national parks in the world, the Kafue National Park, is located in the Tongaland. Moreover, Lochnivar National Park that boasts of having the highest number of bird species in the world is also situated in the Tongaland (Kaoma 2010). Furthermore, the Tonga people own more than three quarters of livestock in Zambia (Central Statistical Office 2010). Essentially, totemism creates harmonious relationship between tribal groups and the natural environment (Grenier 1998).

Notably, table 1 indicates that most of the totems are animals that are commonest and most vulnerable to extinction as they are easily accessible to man. Without culture-related conservation strategies, most of them would probably be extinct.

**Table 1: Clan names and associated totems**

| Clan     | Totem     |
|----------|-----------|
| Muleya   | Goat      |
| Mudenda  | Elephant  |
| Munsaje  | Rabbit    |
| Mweetwa  | Crocodile |
| Muloongo | Monkey    |

|          |          |
|----------|----------|
| Muchindu | Lion     |
| Mwiinde  | Pigeon   |
| Muntanga | Antelope |
| Moono    | Cattle   |
| Muzyamba | Elephant |
| Munsaka  | Dog      |

An observation of many species of scavenger birds and some rare birds prompted an inquiry. The study found that killing scavenger birds is a taboo amongst the Tonga people. Culturally, such birds are never eaten, leading to their high population. These birds are extolled for cleaning the environment as they feast on carcasses of cattle which die of foot and mouth disease almost annually. Moreover, according to most traditional leaders and a number of the elderly Tonga people interviewed, some birds are viewed to be kingly. Amongst such birds is one locally called *nduba*, a colourful and rare bird preserved for chiefs who sparingly use its feathers to decorate their regalia. The above respondents stated that it is abominable for commoners to kill such a bird without the permission of the chief. Moreover, the bird is also regarded as a “lucky bird” in that merely seeing it is believed to announce a fortune.

Furthermore, birds such as *Tumba* (owls) are regarded as “birds of bad omen”. Most elderly members amongst the Tonga stressed that killing them is a taboo followed by a bad omen to the offenders or their family. They are conserved for their role in preying on crop pests, especially rats. This is supported by Kanene (2015) who posits that owls are famous for checking the increase in the population of rats in the Tongaland.

Further observations discovered that the Tonga culture prohibits pregnant women from eating eggs. It is widely believed that breaking this regulation would cause the woman to give birth to a child who may never have or at least may delay developing hair on his or her head in resemblance to hairless eggs. In-depth probing amongst the elderly respondents indicated the underlying rationale of the prohibition as being that permitting pregnant women freedom to consume eggs would probably lead to the extinction of fowls such as chickens as pregnant women tend to be very obsessed with certain nice foods, eggs inclusive.

**Extract from:**

Kanene, K.M (2016) Indigenous practices of environmental sustainability in the Tonga community of southern Zambia. *Jàmhá: Journal of Disaster Risk Studies* 8(1), a331, p. 1 – 7. <http://dx.doi.org/10.4102/jamba.v8i1.331>

Excerpt 5**IsiXhosa Proverbs and Idioms as a Reflection of Indigenous Knowledge Systems and an Education Tool****Andiswa Mvanyashe****Introduction**

In this current postmodern era, it is important that idioms and proverbs are taught at school as school education is an effective tool to impart knowledge to young people. IsiXhosa proverbs and idioms are an indication that Xhosa people were not just looking at animals as they are but also drew lessons from their features. The use of proverbs and idioms was a way of teaching young people about animals and effecting wisdom. This was carried from generation to generation through oral literature. IsiXhosa proverbs will be analysed in this article because they reveal the habits of the birds and animals according to Nyembezi (1954; 1990). This can be helpful to a child who has never been exposed to some birds and animals.

Studying isiXhosa literature, proverbs and idioms could contribute to educating the current and coming generation about isiXhosa culture, customs and history. Many literary texts contain several examples of proverbs and idioms, and writers use proverbs and idioms to enrich their writings. The limited use of proverbs and idioms in the language curriculum of children in their early stage of education has deprived them of learning about their culture and customs as contained in the proverbs and idioms. In the current post-apartheid era, South African education is still in the process of developing most African languages. Although there are policies in place like the Curriculum and Assessment Policy Statement (CAPS), “African proverbs are overlooked” (Nkuna 2015, 149). Refilwe Ramagoshi and Ina Joubert (2016, 1) assert that although it is stated that oral literature will be included in the curriculum in the South Africa National Curriculum Statement and the Curriculum and Assessment Policy Statement (DBE 2011), there are discrepancies between policy and practice. The discrepancies of teaching lead to children missing indigenous education in proverbs and idioms. Xhosa children are not only missing out on valuable insights and knowledge on culture but also historical knowledge, as proverbs and idioms do not only contain messages of wisdom, but also portray the way Xhosa people used to live in a precolonial era. It is very important for pupils to learn the proverbs and idioms at school because “the idioms learned during [the] language teaching-learning process enables learning the culture of the target language being learned” (Göcmen, Göcmen, and Ünsal 2012, 241). Biyela (2003, 1–2) quotes Ishengoma (2000) in “African Proverb of the Month” stating that:

“Proverbs offer practical advice, both spiritual and physical in our daily life ... Proverbs are challenging, have a listening attitude and welcome counselling from every corner in life.”

The quotation above states other advantages of learning proverbs, which are practical, physical and spiritual advice that can be very helpful in guiding young children at school. Sayi (2017, 67) also argues that “proverbs reflect the historical and cultural experiences of African people”. The aim of the article is to identify Xhosa idioms and proverbs in Mesatywa and Jordan’s *Izaci Namaqhalo esiXhosa* (Mesatywa and Jordan 1971) and analyse how they reveal indigenous knowledge about amaXhosa history, culture and customs.

### **Proverbs and Idioms**

Guma (1967, 166) defines an idiom as a characteristic indigenous expression, whose meaning cannot ordinarily be deduced or inferred from a knowledge of the individual words that make them. Unlike proverbs, idioms do not have a fixed and regular form to which they adhere at all times. They are changeable and are seldom, if ever, used in their basic form.

Makuliwe (1997, 5) quotes Nyembezi (1954, xii) asserting that:

proverbs are a useful means of studying people. They show how very observant the people are, for the habits of birds, and animals and behaviour of nature generally do not go unobserved. They reveal what it is that people adore and despise. They reveal what the people’s outlook in life is; and will provide the students of human nature a peep into the character of a people.

Bongela (1991, 7) quotes Nyembezi (1954, xi) explaining that:

a proverb represents in its essential form some homely truth expressed in a concise and terse manner so as to recommend itself to a more or less extended circle.

From this quote, we derive that a proverb is the representation of a “homely truth”; thus, analyses of proverbs can be useful in imparting knowledge about the nature and history of Xhosa people. The following sections provide examples from Mesatywa and Jordan’s book related to birds and animals followed by customs and practices of earlier Xhosa people.

### **Analysis of Idioms and Proverbs**

In this paper, content analysis will be employed, with the main focus on material (proverbs and idioms) in Mesatywa and Jordan’s book *Izaci Namaqhalo esiXhosa*....

..... The proverbs and idioms discussed in this article are divided according to plants, animals, and birds, similar to the structure of Mesatywa and Jordan’s book *Izaci Namaqhalo esiXhosa*.

In this book, you would find that birds, different types of animals, and proverbs and idioms about humans or their body parts are discussed separately and in a specific order. The

proverbs and idioms in this book give many examples reflecting the life of native Xhosa people before the colonial era.

### **Learning from Birds**

Living close to nature and being able to observe the birds in their natural habitat enabled the Xhosa people to draw similarities between birds and people and to create idioms and proverbs to teach valuable lessons. Some examples are offered below (Mesatywa and Jordan 1971, 28):

*Utyebele ngaphakathi nje ngendlazi*

("Your fatness is inside like a mousebird.")

Mesatywa and Jordan (1971) describe the mousebird as the bird that eats mice. Although it looks small, it is fat on the inside.

The figurative meaning of this proverb is that a person might know a lot, but they do not show what they know. The fatness represents the knowledge a person has. Fatness can also be associated with richness. Schools can be a symbol of the source of "fatness" because it is where children are groomed for the future. If the teachers do not use CAPS as expected, as it is indicated that the introduction of proverbs and idioms in the early stages of education is important, they can be robbed of important knowledge.....

### **Learning from Animals**

A second collection of proverbs refers to animals and reptiles. The researcher has chosen a proverb about a chameleon....

*Ukuba lunwabu*

("To be a chameleon")

In order to grasp the meaning of the proverb, one has to understand the denotative meaning before one can take out the connotative meaning. A chameleon is a reptile that moves very slowly. If someone refers to you metaphorically as a chameleon, they mean you do things at a very slow pace. This reveals that indigenous people did not only recognise the chameleon as an animal that changes colour to blend in well in an environment, but they also knew it as an animal that moves at a very slow pace. When looking at the chameleon's behaviour one can also extract a message about one who changes attitudes when meeting different people. This proverb highlights the features of a chameleon and contains a message a child can learn in dealing with life. The chameleon can teach learners something about adaptability in their early age of learning.

**Andiswa Mvanyashe (2019).** IsiXhosa Proverbs and Idioms as a Reflection of Indigenous Knowledge Systems and an Education Tool. *Southern African Journal for Folklore Studies*, 29(2). #5615, 14pages. <https://doi.org/10.25159/2663-6697/5615>

### Excerpt 6

**Semenya, S.; Potgieter, M.; Tshisikhawe, M.; Shava, S.; Maroyi, A. (2012).** Medicinal utilization of exotic plants by Bapedi traditional healers to treat human ailments in Limpopo province, South Africa. *Journal of Ethnopharmacology*, 144: 646–655

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