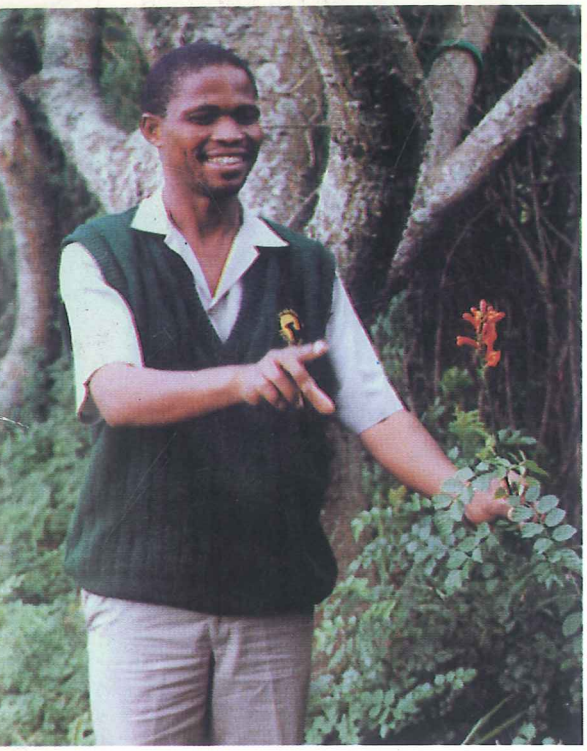
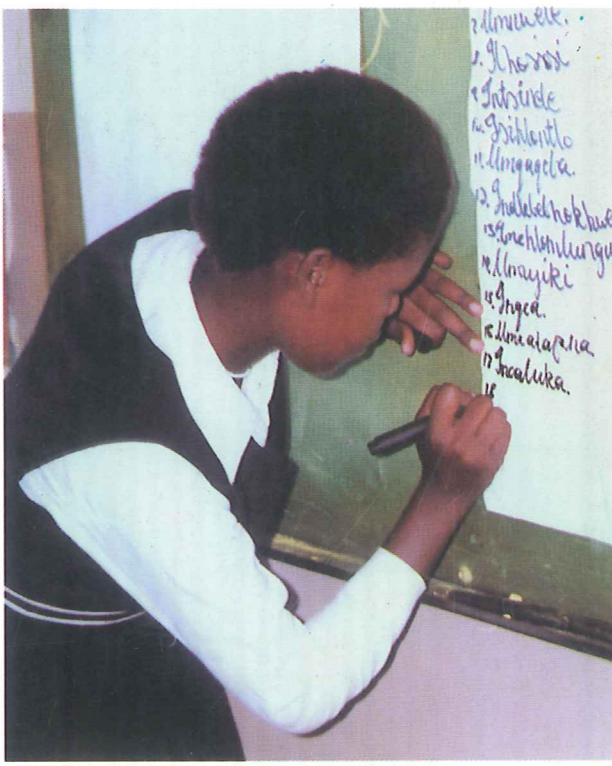


15 43

UNIVERSITY OF FORT HARE

Eastern Cape Education Department

Distance Education Project



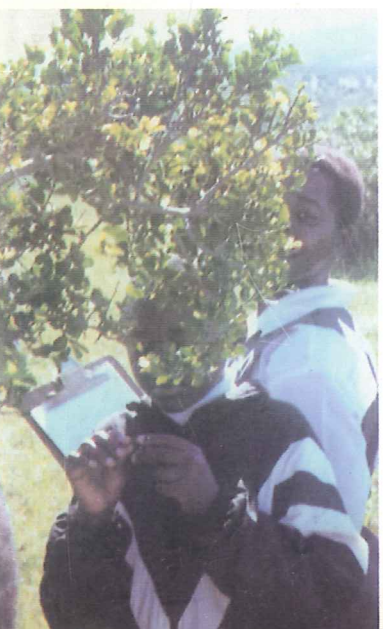
Core Learning Areas Course

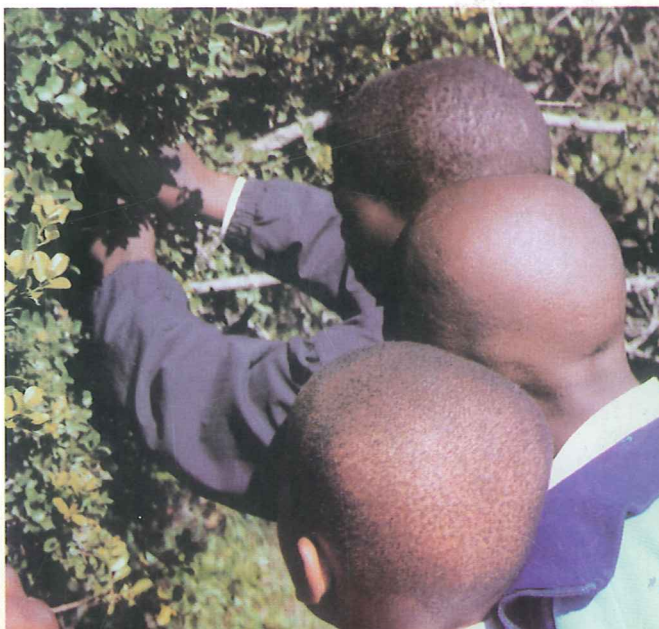
Natural Science

6th Umthamo

Gardening and Guarding our Heritage Plants

Pilot Edition – May 2001





Annotated bibliography

Batten, A and Bokelmann, H.1966. *Wild Flowers of the Eastern Cape Province.* Cape Town: Books of Africa.

Botha, C and J. 1996. *Bring Nature Back to your Garden.* Durban: A Wildlife Handbook.(A very readable and useful book with a wealth of interesting information about South African plants and animals)

Dyson, A. 1998. *Discovering Indigenous Healing Plants.* Cape Town: The National Botanical Institute/Share-Net. (A really useful little handbook that every primary school should try to get)

Gledhill, E. 1981. *Eastern Cape Veld Flowers.* Cape Town: Creda Press

Loucks-Horsley, S, Hewson, P, Love, N and Stiles K. 1998. *Designing Professional Development for Teachers of Science And Mathematics.* California: Corwin Press.

Palmer, E. 1977. *A field Guide to the Trees of Southern Africa.* Johannesburg: Collins.

Powrie, F. 1998.*Grow South African Plants.* Cape Town: Trident Press. (A detailed and useful reference book for the garden specialist)

van Wyk, B-E and Gericke, N.2000. *Peoples Plants - a guide to the useful plants of Southern Africa.*Pretoria: Briza Publications. (A wonderful book full of very interesting information and very progressive, but expensive due to all the full colour photographs. The kind of book to order for your school if you win an award of about R200)

Contact Addresses
for the Department of Environmental Affairs and Tourism.

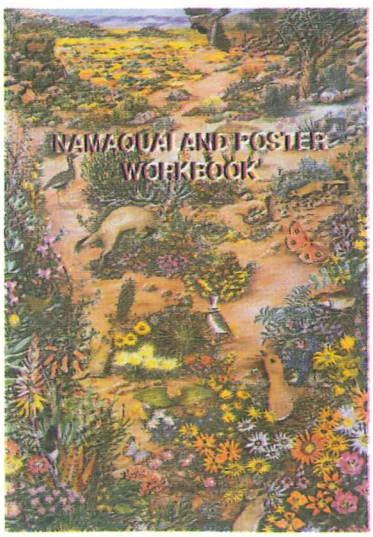
Central Region: Ph - 043 741 2212 – Mr S. Mabizela, Mr B Madolo or Ms N Tsotsa

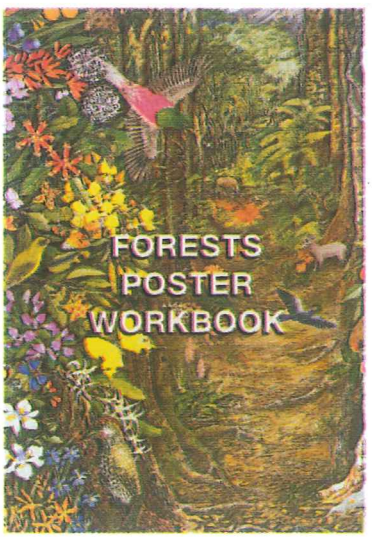
Eastern Region: Ph - 047 531 1191 – Ms N. Ntola or Mr G Mpuhlu.

EG - Kei: Ph - 037 727 3273 – Mr R. Moss or Mr A Jara

Northern Region: Ph - 045 838 3984 – Ms J Youthed or Mr M. Kani

Western Region: Ph - 041 585 1850 – Ms P. Mzazi or Ms Z. Mene

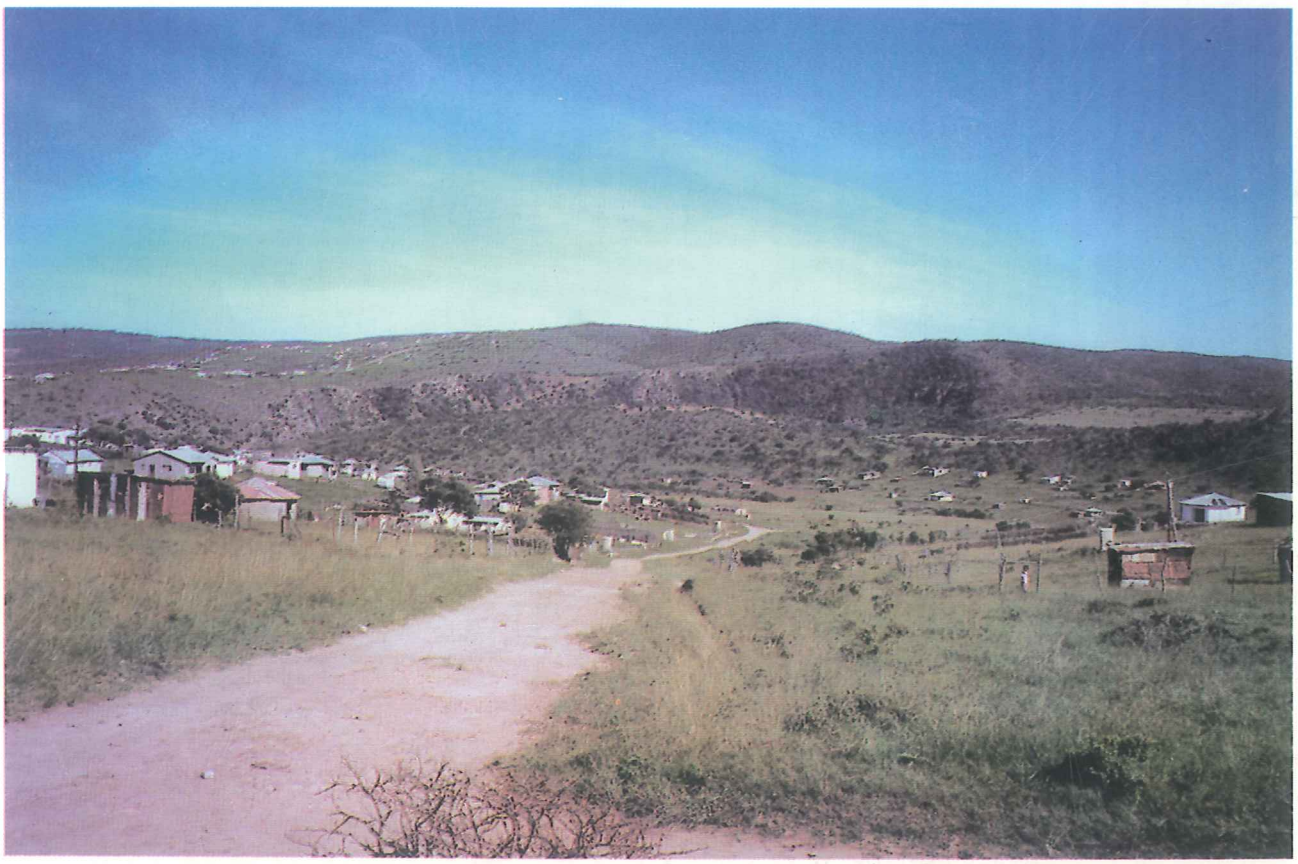




Gardening is a pastime that has for centuries occupied princes and paupers. The motivation is usually a desire to possess a small piece of nature, regardless of the size of the garden. Even Mr Nelson Mandela, arguably this country's most popular ever leader, enjoys gardening. One of the few privileges allowed him during his later years of imprisonment was to have a small garden. In his autobiography Mr Mandela states "To plant a seed, watch it grow, to tend it and then harvest it offered a simple but enduring satisfaction. The sense of being the custodian of this small patch of earth offered a small taste of freedom".

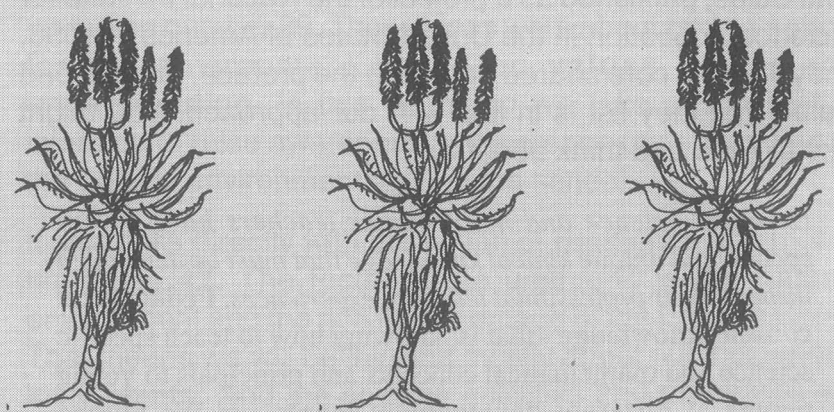
Charles and Julia Botha. 1996. *Bring Nature Back to your Garden* (Durban ; A Wildlife Handbook published by the Natal Region of the Wildlife and Environment Society)

Mpintsho Village with Valley Thicket in the background.



Printed by: L. Harry & Sons, 18 Kimberley Road, East London 5201. Telephone 7220604.

Contents



Introduction

This is the sixth umthamo in the Natural Sciences strand of the Core Learning Areas Course. It aims to extend and build carefully on what has gone before in the other Natural Sciences imithamo. It also links and integrates with aspects of other imithamo in the Core Learning Areas Course and with certain of the imithamo in the Core Education Studies Course.

It may be useful at this stage to revue what you have gained and dealt with so far in the Natural Sciences imithamo. Remember that the Fort Hare DEP approach is an **integrated** one. So, although an umthamo may focus on a specific important aspect of the teaching and learning of Natural Science, it will always embrace other learning areas, and re-enforce other educational principles in a **cross-curricular** way.

The other important thing to remember and be aware of as you review the work you have been doing in the Natural Sciences, is the approach we have in these materials to **content knowledge**. We cannot hope to teach you everything there is to know about science. There has been an explosion of science knowledge in the past decades. But we can hope to influence your **attitude** to science content.

We know from the affirmation process that many of you are in fact becoming more **confident** about the teaching of science. This is great. We think it is because our deliberate emphasis is more on the **'how to'** than the 'what to' of science teaching and learning. In fact we try to pull the two aspects together so that as a teacher you concentrate on both and the focus becomes **'how to best teach whatever'**.

*Remember, we trust you to take **responsibility** for your own content knowledge, and for this reason we provide a **content audit** in most of the imithamo. We hope you are taking this seriously.*

In a recent book on the teaching of Science and Maths, *Designing Professional Development for Teachers of Science and Mathematics* by Loucks-Horsley, Hewson, Love and Stiles, published as a project of the National Institute for Science Education in the United States of America in 1998, they list their core shared **values** in the preface. The second value that they list is in line with our approach. You might like to read and think about it.

You might recollect that we used a quote and material from this book on pages 7 and 8 of umthamo # 19.

> *Excellent science and mathematics teachers have a very special and unique kind of knowledge that must be developed through their professional learning experiences.* **Pedagogical content knowledge** - that is, knowing how to teach specific science and mathematical concepts and principals to young people at different development levels - is the unique province of teachers and must be the focus of professional

development. Knowledge of content, although critical, is not enough, nor is knowledge of general pedagogy. (Lucks-Horsley et al, 1998: xviii and xix)

Equally important is their pedagogical content knowledge: what teachers know of the ways in which different types of knowledge interact with one another and how they can be used to support one another in leading towards effective teaching (Shulman 1986). Teachers' pedagogical content knowledge includes understanding that some mathematical ideas and science concepts are more difficult for students to learn than others, more fundamental than others, more easily modelled than others, and less well understood than others..... They recognise that they practice in uncertain circumstances, that much of their knowledge is embedded in their practice rather than in codified bodies of knowledge, and that their extensive, complex knowledge, particularly their understanding of how learners learn, profoundly influences how they teach. (Lucks-Horsley et al, 1998:32)

*Notice how we have gone to the academic literature on Science Teacher Development to find **theoretical support** to back up our DEP approach.*

In our imithamo we have tried to take serious account of ideas about teacher development such as these. Do you think we have been successful in helping your development?

As you move into the fourth year of the course we will be asking you to reflect back on how the course has impacted on your ongoing professional development as a teacher. Thinking about our approach and linking this to your own experiences and developing understanding as a teacher will be an important way of making this reflection worthwhile.

It will also be important for you to be able to quote from the literature we have provided for you to give theoretical support to your ideas.

What you will find in this umthamo

This umthamo builds on ideas about Environmental Education that we developed in the Technology Education umthamo number 39. These ideas were about **taking action** for the environment based on **values, ideas** and **understanding**. In this umthamo we take action that is intended to raise awareness and increase understanding of the natural environment around the school.

It also links directly with the notion of **resilience** you met in umthamo 42. The focus of the umthamo is our natural environment and the rich floral heritage of the Eastern Cape. That means we will be thinking mostly about our indigenous local **plants**. And the science activities and processes we will be working with will be those of **botanists**.

The **key activity** involves you and your learners taking action to bring the veld into the school, as well as finding ways to take the school into the veld. We suggest that you consider, plan and start an indigenous school garden in unit 3, and we propose that you plan and develop a Nature Trail near your school in unit 4. The most important **outcome** of activities like these is that learners will come to **value** our rich diversity of plants as they encounter them more consciously and work to learn more about them.

Please note that the hand in **reflective report** for this umthamo is not based on the key activity. You will give evidence of having worked though the key activity at the **portfolio presentation** sessions at the end of your academic year (semester 6). For the **reflective report** you will hand in a 'thick' description and reflection of the process and outcomes of activity 2 in unit one.

One other important thing to note is that we have not provided specific guidance for older and younger learners. We feel that this work is appropriate and important for any level of learner and that it is up to the teacher to decide how much support and guidance is necessary for the learners, and how much they can do unsupported.

Links

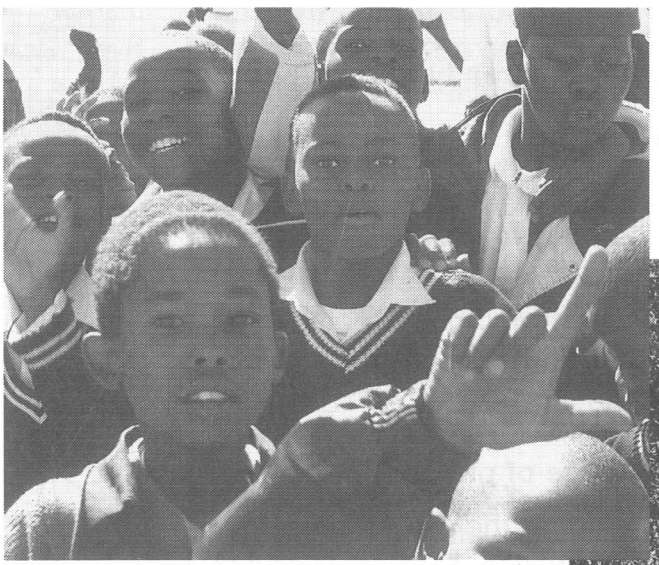
The work in this umthamo has some very important links as an integral aspect of what we are asking you to do.

Firstly there is a link with an important national initiative. Every year as a contribution to the promotion of World Environment Day, a wonderful full colour poster and an accompanying educational booklet is distributed to primary schools countywide for use in the classroom. This project is undertaken jointly by the Botanical Society of South Africa and the National Botanical Institute, and sponsored by Old Mutual. For the year 2001 the theme is **Valley Thicket**. This type of vegetation or **biome** (vegetation region) is unique to the Eastern Cape. The production of the **Valley Thicket Poster** coincides with the development of the pilot edition of this umthamo and will be an important integral resource for many of the activities of the umthamo.

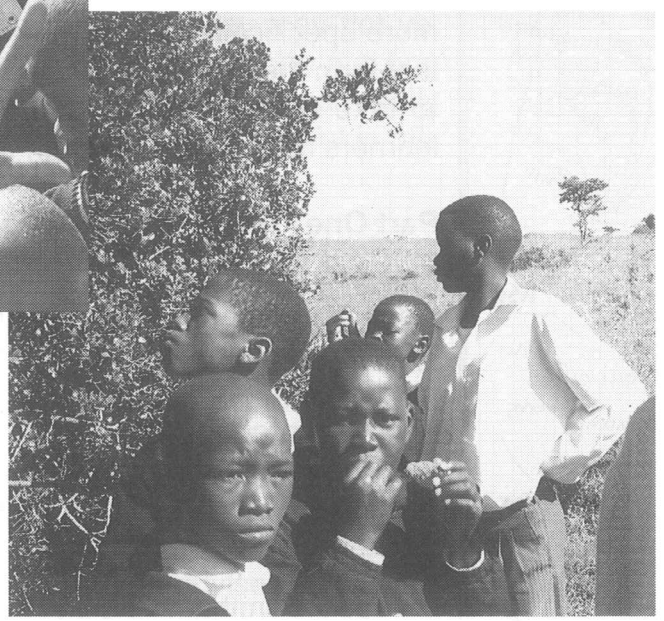
Secondly, we hope to show in this umthamo how officials, of the Department of Environmental Affairs and Tourism can be consulted as colleagues in education. Where it is possible to work hand in hand as link partners, valuable educational work can be done in promoting awareness, understanding, attitude development and eventually the taking of responsible action to care for our **heritage plants** once they are appreciated and valued.

In 2001 these officials are launching an Environmental Awards Scheme in the Eastern Cape. The first group of teachers to do this umthamo will find that there may just be time for them to enter their schools for the category, *'Best Rural School Environmental Project'* as entries close on 25 June 2001.

It is intended that these environmental awards will become an annual event. This means that there should be a chance to enter for the awards in subsequent years as well. The slogan for the year is an interesting one. "A healthy environment is your right. Caring for it is your responsibility."



A healthy environment is your right.



Caring for it is your responsibility.

Unit 1 - Local plants

In umthamo number 42, *'What's the Difference that makes the Difference?'*, you read about **emotional intelligence** and the idea of emotional fitness, which is also called **resilience**. You also read on pages 6 and 7 how some Eastern Cape plants are known for their resilience. In this umthamo you have a chance to explore these ideas further.

Remember that if a teacher wants to build new learning on a firm or sound foundation, she has to first establish and consolidate what is already known. The two activities in this unit are designed to establish a foundation for later work.

Activity 1 - Revue of what is already known about plants

This activity has two parts. Firstly you need to have a good idea of what your learners already know about plants in general. Then you can go on to consider local plants more specifically as you work towards the two projects that form the basis of the key activity. You will also need to take account of the age and background of your learners as you work through this activity.

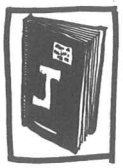
Part One - General knowledge of plants

This activity builds on and extends the activities that you did in umthamo 27. Here you got your learners to reveal what they knew about plants in an incidental way as they made models of a typical plant, and as they created poems in praise of specific plants. Now we want you to help them to do the same thing in a more deliberate and conscious way. It will be interesting to compare the differences that you find.

Go back to umthamo 27, and turn to page 31 where there is a mind-map that will help you because it sets out the type of things you can expect your learners to consider. You can use it as a check to compare how much your children already know, and as a means to identify gaps in their knowledge.

With younger children, we suggest that you do this as a teacher directed activity with the whole class or with a large group of learners. Tell them that you want to record everything that they already know about plants. You can act as scribe and note down their collective knowledge in the form of a mind map. Later, in your own time, you can compare what they have given you with the content audit mind map on page 31 of umthamo 27.

It is important that you don't feel you have to stop and teach them everything that they don't already seem to know. This is really just **diagnostic assessment.** Bide your time. Make a mental note of the gaps, bear them in mind, and stay alert for the appropriate moments when something can be dealt with effectively at some time in the future. When learners meet something new at the right and relevant time, its impact will be particularly powerful. There is a time and place for everything.



You might want to record your findings and conclusions in your journal. Note down your assessment of what is not well understood and any gaps in learners understanding. Be prepared to report on what you found at the face-to-face session where this umthamo is monitored.

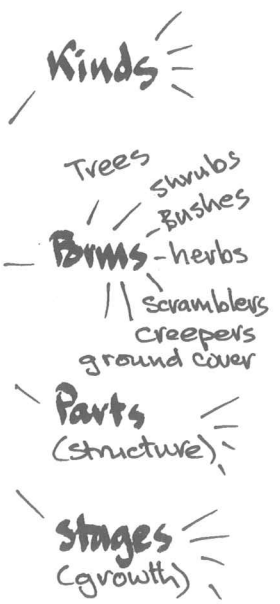
As you proceed with the further activities in this umthamo, you can be aware of finding appropriate moments to bring learners into contact with things that they may not yet have considered. This means that they will be meeting new knowledge in a realistic context. It will be more likely to make sense to them and be more meaningful in this way.

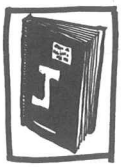
*Dealing with new learning in this way is known as **contingent responsiveness** in the academic literature.*

If you are working with older learners you might prefer to choose to let them work more independently in largish groups. Explain that you want each group to make a summary of what they know about plants in general. Suggest that each group does this in the form of a mind map, and provide them with suitable paper. They shouldn't take more than about 15 minutes to complete the task.

Then suggest that groups combine and share what they have produced. It might be useful to advise them to tick any items that both groups have included. This will reinforce, and emphasise what is commonly known. They should add any known points that they get from the other group to their own notes using the original colour pen or pencil. But if one group has something that the other group didn't know, the other group should add it in a different colour.

When you collect their work and go over it in your own time, you should be able to get a good idea of what is generally known about plants and what isn't. Remember to take account of the advice not to try to teach immediately to the apparent gaps in knowledge, but to bide your time until the **teachable moment** occurs.





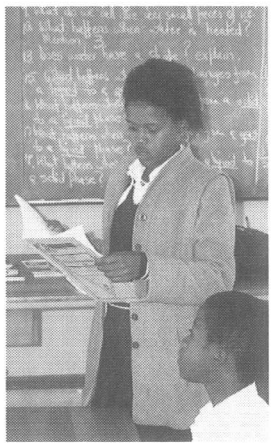
Whether you work with older or younger learners you **must** record your assessment and reflection in written form. You can write it into your journal or on a separate sheet of paper. Store this in your concertina file together with samples of the children's work so that you can present this as evidence at your portfolio presentation.

Part Two - Knowledge about specific plants

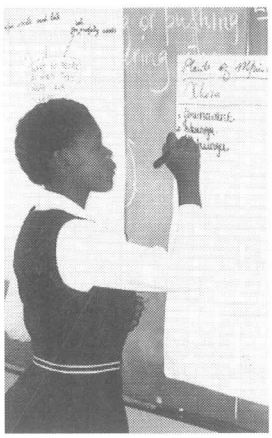
Knowing the names of Plants

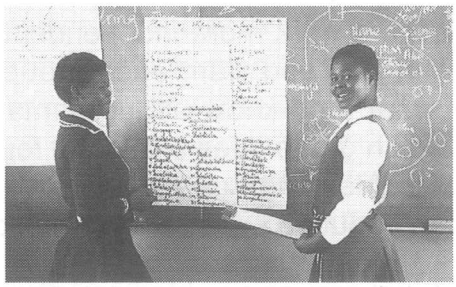
One of the things that botanists do is to make **check lists** of the plants that they come across in a specific area. In this part of the activity you and your learners will be starting the process of building up a **check list** of your local plants.

Botanists are people who work with and study plants.



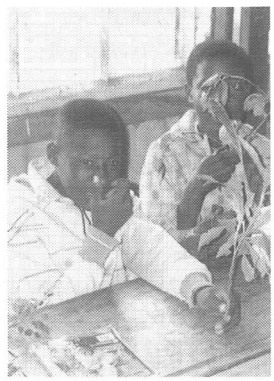
Find a suitable time, perhaps at the end of a school day, when you have about fifteen minutes spare. Then either as a whole class, or in groups, set the task of compiling a list of all the known local wild plants. When we trialed this activity at Mfunalwazi, the learners came up with a composite list of 52 different plants. Now they were ready to start the process of investigating, or researching local knowledge of the plants. They were also very motivated to find out if there were other plants to add to their check list





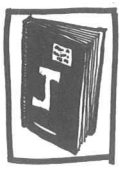
Being able to identify Plants

At Ngwevana we tried something different. We took samples of local plants collected near the school into the classroom for learners to name. We found that they struggled to name and identify many of the local plants. They knew of the names, but they could not always associate a name with a specific plant. But they looked forward to the challenge of going back to the local community to try to find out what the names might be. They were also very keen to come with more names for their check list. You might suggest to learners that a note is made of the date when a new plant name is added to the check list in future. This means that the check list becomes an ongoing project, because the check list is continuously being revised and updated.



Knowing about Plants

At this stage let the children share any informal knowledge they have about the named plants on their check lists. This sharing can take the form of an informal and unstructured discussion. You will see that learners find this sort of informal discussion very liberating. There is no pressure on them to perform. They don't feel judged, and are often seen to be more free to express themselves. When they seem to be running out of things to say, draw the discussion to a close. Point out that the next task will be to think of ways to formalise and structure what is known and what can be found out about the local wild plants.

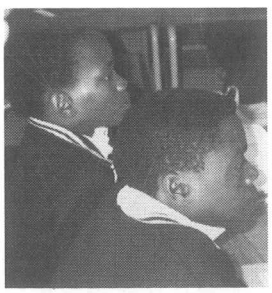


While the informal discussion is taking place, you should try to keep rough notes. Do this in an inconspicuous way so that you don't put pressure on the learners and cause them to feel nervous. Later on, in your own time, do a careful journal write where you try to capture the **substance** (content - or what was said) and the **spirit** (mood or atmosphere) of the discussion.

Taking the activity further

At a later stage get learners to volunteer as individuals, or in pairs, or small groups to take responsibility for **finding out more** about the specific plants that they have included in their check list. Each individual or group should choose just one local plant to research.

You have had guidance for doing this type of thing in the key activity of umthamo 27. You may want to go back to read pages 23 to 26 of that umthamo, if you have not yet made this approach a habit, or part of your regular practice as a primary school teacher.



Spend some time discussing what sort of information would be relevant and interesting to collect. At Ngwevana we came up with points like....

- name
- where found
- appearance of plant, leaves, flower and fruit, or seeds
- uses
- animals that can be associated with the plant
- interesting beliefs etc.

Again match your expectations to the age and experience of your learners. But don't underestimate the younger ones.

Headings:
What happened
What I learned
What comes next

Reflective Report

The hand-in assignment for this umthamo is a reflective report on the activity that follows. Your task is to firstly provide a 'thick' description of what took place. A thick description means that you provide a lot of detail and specific information to give the reader an exact picture of what happened. Secondly you should select one or two 'significant' moments where you feel effective learning took place. Reflect carefully and analytically on those moments. Show how you have understood what has happened and try to explain what has actually made the learning/teaching effective. The final, but minor part will be to report on your efforts with your learners to find ways to take this work further.

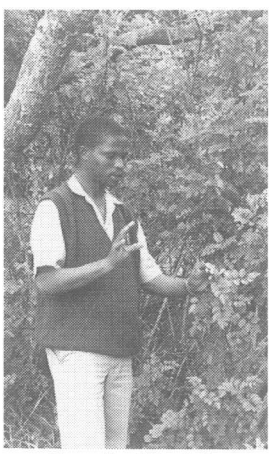
Preparation for activity 2

Give the learners a few days to complete their research. In the mean time try to arrange that someone who does know the names and some interesting facts about your area's local plants is available as a consultant, or visiting partner when the learners report back.

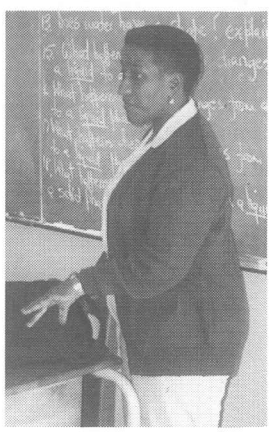
There are a number of possibilities, but you will need to use your own initiative. There may be people who work in Nature Reserves, Agriculture, or Forestry, or in Environmental Affairs and Tourism who are willing to help. If you live near a larger town or centre, you might find that someone from a commercial nursery is prepared to make themselves available. Perhaps there is a person in your community who has a reputation as a herbalist who could be approached to visit your class. Some municipalities may employ horticulturalists. Perhaps there are keen gardeners on the farms, or in the towns near your school who would be prepared to share some of their knowledge.

The officials from Environmental Affairs at the Amalinda Centre were very willing to help. The manager, Mr Sizwe Mabizela was very supportive. He arranged for Mr Bonile Madolo to go with us to Ngwevana, and for Mrs Ndileka Tsotsa to accompany us to Mfunalwazi. You will find contact numbers for the regional offices of the Department on the inside back cover of this umthamo.

If you can't link up with anyone with specialised knowledge of local wild plants, do not despair. You and your learners can make it your business to become the ones with special knowledge of your local plants. As you work together to find out on your own and build your own form of understanding collectively, you will find that you become the experts. There is an annotated bibliography at the end of this umthamo which will refer you to some useful reference material.



Bonile Madolo

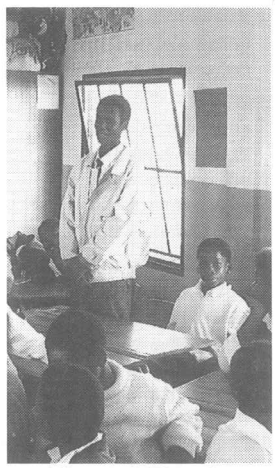


Ndileka Tsotsa

Activity 2 - Sharing and building plant knowledge

You need to set aside a double period or more for the sharing of knowledge and information about the plants. You need to make arrangements for your link visitor, and confirm the day and time. It might be useful to meet with the person beforehand to brief them. They will be at ease and confident if they know what is expected of them. You could show them the umthamo, and even give them a photocopy of these pages.

You need to remind the learners of their task a day in advance. Ask them to make sure that they have their notes and a small sample of the plant. Remind them that they must be careful not to cause any major harm, but just to bring a few leaves, a flower or two, or perhaps a small bit of a leafy branch. Soft or delicate parts can be kept fresh if they are carried in a closed plastic bag. Give a selected learner, or volunteer the additional task of preparing a special vote of thanks to the visitor. Perhaps another learner or group would like to make a careful thank-you card with some drawings of plants or flowers.



Vote of Thanks

You also need to establish a pattern for the sharing. This is what emerged at Ngwevana.

- A learner, or group responsible for finding out about a plant would show their plant and get a chance to read or talk about what they had found out. They were to credit their source/s of information.
- Then anyone from the floor could ask questions of clarification. If something was not clear, you could ask for a clearer explanation.
- Then additional information was called for, and any learner from the floor could add what s/he knew. This information was added to that already given and the source was credited.
- Finally the visitor, Bonile Madolo was given a chance to briefly respond to what he had heard. He could add information, question some facts and even suggest further lines of investigation. At this stage we also made use of some of the reference books that we had available to confirm (re-enforce) what had been said.

It is up to you to decide on your approach in collaboration with your learners. They will enjoy particpating in the decision-making. People are always much more co-operative if they have had a say in determining how the proceedings will go.

Reflection on Activity 2

The session at Ngwevana was very rewarding and most interesting. Where the learners had previously been quite uncertain about names and identifying local plants, they were now very confident and spoke with authority. They were clearly proud of what they had found out to talk about. One got the feeling that an attitude change was in the process of emerging. Having an outsider endorse and take an interest in their work, really seemed to give them a message that taking an interest in plants was a worthwhile exercise.

This germinating interest in the local plants would need to be nurtured over time. With ongoing support from concerned adults, a robust and healthy attitude towards the natural environment could grow. When the learners **value** something, there is a far greater chance that they will **care** for it in a **responsible** and **systematic** way.

Pheliswa Sijila

Home work

1. Igwada
2. Iyathandwa zinyamakazi
3. Kuyathingilwa ngayo
4. Ifakwa ezimpumlweni
5. Xana unefuthe webenzise,
6. Iphuma intyantyambo ezintle

Help: Nomzi Mjabana.

My Name is Mzoabanlu My Surname Siyange
My School Name is Ngwevana Primary

1. Iona kuthiwa lingcukuma Uncenda kakhulu ebantwini abangqangqanjelwa zindlebe nesisu esibuhlungu Nakunye nanko apapambayo Uyalomisa uze ulighle Unjenje ezimpumlweni Uwufake emanzini ashushu Ukuze alsale Ugale uwomise ukuze alohe mainyane

1. help. Me it was andiswa Mataalathi live at Khwetyana location.

Busisiwe Gxagxa

24-04-2001

Homework

Isikholokoto silunceda ekunyangeni indlebe Xana ibuhlungu iplant entle kunye necatour zayo zintle Xana yona ukujiga-kla endlebeni Xatto uyayifaka wandule uyikhore-le esepleni isatuphila indlebe Xatto iyafumaneka phambi kwe geyithi

Help. Ntombeaxindi tantasile

Inzinzinba

Inceda nasekuqutheni.

1 Inceda xa unefiva uyibheke umane usela

2 Inceda na se fini

3 Inceda ekugabheni xa unesisu esibi

4 Inceda nasekucimeni Xa umntwana enesisu esibi

Sanseriona.

Onele [illegible] help: mama [illegible].

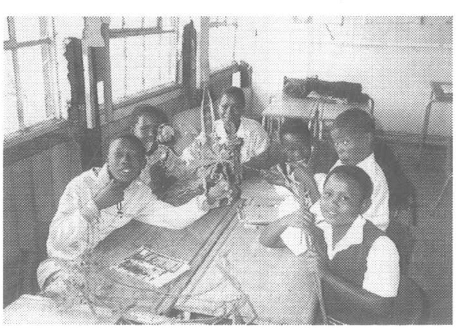
Ngamalalamthi ngomnquma

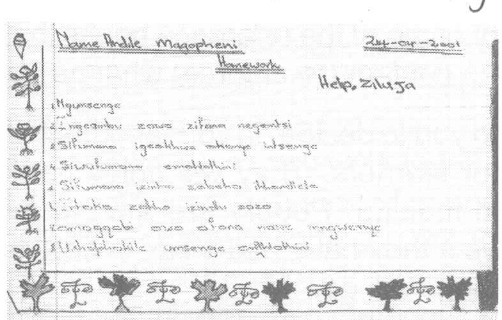
Umnquma kelona ukuceda xausenza amasiko like ukolusa abakhetha ~~and~~ ~~Nu~~ xakududuma uye uyibeka phambi kwe dlu [illegible].

24 APril 2001 "Ncediswa" Mlenze"

Impepha

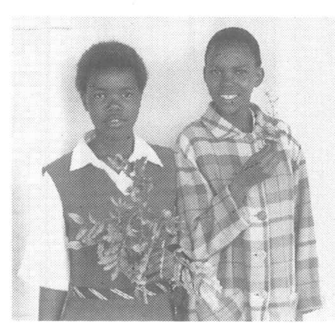
Impepha inceda ekuqhumiseni izinto ezimdaka
Inceda unesifuba esiminxeneyo uyisele
Irumba layo linuka kamnandi
Umbela wayo uhlaza




Name Andile Magopheni 24-04-2001

Homework

Help. Zilija

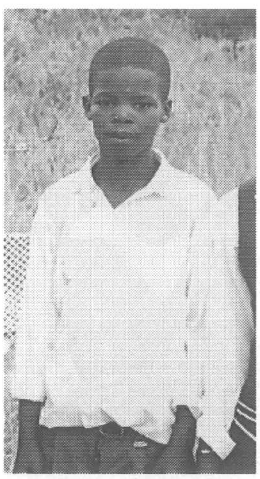


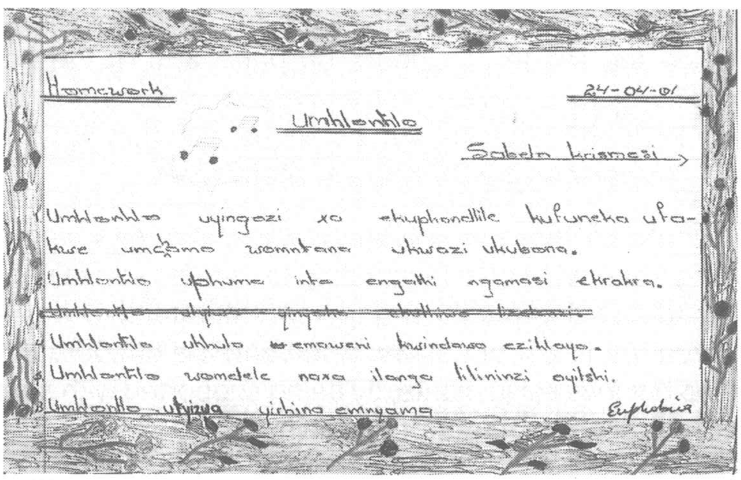
There was a good example of how information given by a learner was added to, as well as challenged and dealt with in a way that was not threatening to the learner. Sobelo had chosen the Euphorbia (umhlonhlo) to research and talk about. He had a fair amount to say. He also added the fact he was told that water snakes eat that plant.

Bonile responded sensitively and skilfully. He endorsed what Sobelo had said. Then he added some information. He pointed out that the black rhino was partial to, and relied on this plant for food. But he went on to question whether snakes could in fact eat plants. Did they have the 'right' kind of mouths and teeth for eating plants? This query led to some interesting general discussion. What did snakes eat? Why were there stories about snakes like cobras, stealing, or drinking milk? Was this a fact, or a belief? The euphorbia has a bitter, milky juice? What is the association? Euphorbias are very thorny and impenetrable. Wouldn't they make a good place for a safe refuge for a snake? Beliefs are interesting, and worth finding out, but not always factual. You can see from Sobelo's work how he altered his notes on his own initiative.

Sizwe had interesting things to add when he read the draft.

- *Cattle robbers use the milk of euphorbia to change the colour patterns of stolen cattle.*
- *The soft hollow centre of large euphorbia trees were a good safe place to hide things in the struggle years.*

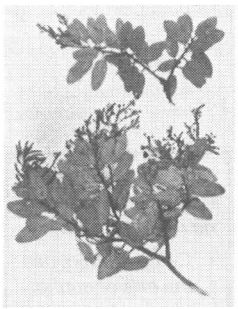


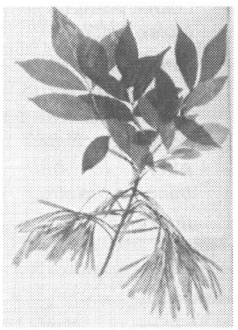


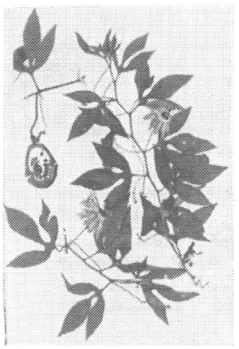
The above is a sample or model of how you can include a reflective anecdote in your writing. Here we see how **evidence** is given to support the effectiveness of a specific approach to dealing with problematic information.

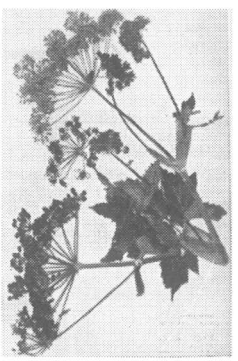
In the March 2001 affirmation process, one of our visitors from the Open University in Britain, Sandra Amos, pointed out that she felt teacher-learners were not yet supporting their ideas and opinions with substantial, or convincing **evidence**. Teacher-learners need to give this comment serious consideration. When you write in your journal, and when you go back and reflect on what you have written in the past be alert to what could be used as convincing **evidence** to support what you believe or want to say about your practice.

Pressed, Dried and Mounted Plant Specimens









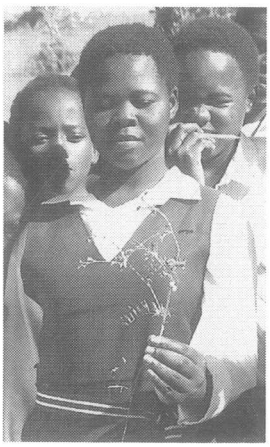
Old telephone books make a very good resource to press and dry parts of a plant.

Taking the work forward

We will of course be asking you to take this work forward in quite specific ways in the key activity set out in unit 3 where you plan to develop an **indigenous school garden** and in unit 4 where you consider developing a local **nature trail**.

This is a very open-ended part of the umthamo. As we talked to people when we were developing this umthamo, we became aware of just how many possible botanical and ecological activities and processes there were for follow-up work. The follow up need not be restricted to the important aspect of extending knowledge and **finding out more** (umthamo number 27). The choices for additional valuable practical work seemed almost limitless.

Some emerged from the children themselves. Boys at Ngwevana asked if they could borrow the coloured crayons. They had noticed the beautiful **botanical illustrations** in some of the reference books. Now they wanted to do their own careful illustrations of their plants. Others wanted to make their own **reference book** of the medicinal plants of the Ngwevana area. When learners heard that the flower of the flower heads of kakiebos make an excellent dye and they saw the range of colours on page 259 of the book, *People's Plants - a Guide to Useful Plants of Southern Africa* by van Wyk and Gericke, you could just see that they were keen to **experiment with natural plant dyes**.



At Mfunalwazi there was Nomawethu, who was clearly a budding botanist. It was fascinating to see the sensitive way she handled living plants and the careful attentive way she observed the finest of details. She could be encouraged to develop her interest in plants, by being supported with special **plant research projects** of her own.

Other ideas came up as we consulted people committed to the celebration and preservation of the plants of the Eastern Cape. Auriol Batten, the well known botanical artist from East London and co-author of the book, *Wild Flowers of the Eastern Cape Province* suggested that schools start their own **herbarium** where they carefully store pressed and dried plant specimens mounted on cardboard for reference and identification purposes. Someone else suggested that if a school or class decided to have a **plant of the week**, then about 40 plants would get some special attention every year. Perhaps the grade 7 class each year could have a project to prepare and bind a presentation book called **Plants of the Year** for the school library of the work that had been done on each plant. They would leave the school with a useful resource book for the learners that follow.

*The **Herbarium** collection could be a reference for future use in identifying plants and a support to the **Checklist.***

Bonile

A bit of vocational guidance

When Bonile visited Ngwevana, and Ndileka visited Mfunalwazi, we gave them a slot to talk about the work of Nature Conservators. They told their story. They also outlined the type of training and educational opportunities available, as well as the perks and advantages that go with their work. Very few learners are aware of the professional career opportunities in the fields of environmental education. It is important that learners' eyes are opened to broader professional opportunities than teaching and nursing.

Here is Bonile's Story.

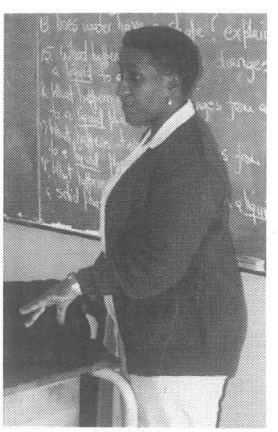
"I completed std 10 at Msobomvu Senior Secondary School in 1988. Due to poor financial background, I was forceed to go to work first to earn finance for my further education. I worked as a general assistant in the Department of Agriculture and Forestry of the then Transkei administration. I worked in six different Transkei forest stations. Eventually I was awarded a bursary to study forest management at Fort Cox Agricultural College in 1992."

Then he went on to say that in 1995 he completed a National Diploma in Nature Conservation and in 1996 he did a Certificate in Environmental Education through Rhodes University. In that year he was also involved in the consultative process for the formulation of a National Environmental Policy for South Africa.

He is currently registered for a Further Diploma in Education at the University of South Africa.

In his work as a district environmental educator for the department of Environmental Affairs and Tourism, he was involved in the launching and management of an Enviro Clubs Project at 23 schools around East London. He is very interested in youth development work, and has done work negotiating for sponsorships for youth environmental projects and programmes in the Central Region.

His work is challenging and rewarding, and he could recommend the career to anyone who likes working with people and with nature.



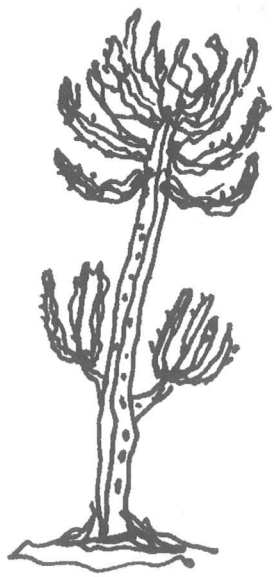
Ndileka

You might want to ask your visitor to do the same thing. It would be very interesting to hear about the training and work opportunities of a traditional herbalist. How do horticulturalists get their training? Where do you find out about courses for forestry?

Unit 2 - Resilient plants

At some point you need to spend time with your learners developing the idea that what makes so many of the Eastern Cape plants so special is their toughness and resilience. In this unit we will give you some additional background about some of these special plants of the Eastern Cape. This is in preparation for the work you will do in unit 3 and unit 4.

We will also give some thought to the effective use of posters in classrooms and we will refer to the 2001 Botanical Society **Valley Thicket** poster. This is what they have to say about Valley Thicket vegetation in the introduction to the workbook that accompanies the poster.



Valley Thicket

Introduction

The vegetation of South Africa is divided into 7 biomes (vegetation regions), and the Valley Thicket is one of them. In nature there are no boundaries separating plant communities and the biomes merge. In the coastal regions of the Eastern Cape a complex mosaic of plants from Fynbos, Grassland and Sub-tropical forest biomes grows in the valleys of the streams and rivers that flow into the Indian Ocean. Botanists call this vegetation type Valley Thicket, Fish River Scrub, Addo Bush, Spekboomveld, Succulent Scrub or Bontveld, but do not agree on the names, boundaries or composition of these dense, evergreen succulent forests. They do however all agree that it is a unique biome that requires further research and needs urgent conservation.

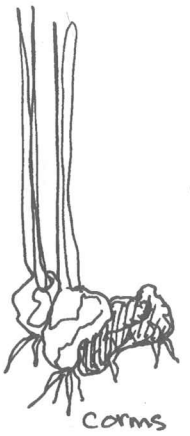
Less than 2% of this region has been set aside for conservation. Large areas have already been cleared for irrigation, stock farming, holiday homes, industry, roads and the development of towns. We must ensure that this wonderful variety (bio-diversity) of plants and animals is conserved for future generations. The valley thicket has more than 5000 different plant species, many of which are endemic and do not occur anywhere else. The plants are well adapted and can tolerate extreme climatic conditions. The temperature in the valleys can vary from 7*C in the winter to40*C in the dry summer months. The unpredictable rainfall varies from 200 to 600mm per annum and occurs at any time of the year. Droughts are regularly followed by floods. Fertile alluvial and acidic sandstone soils

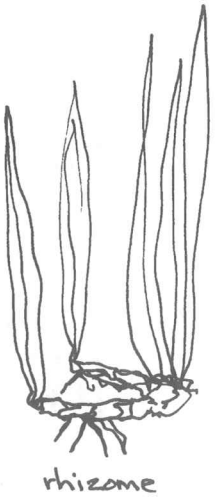
alternate with alkaline limestone and brackish Karoo soils.

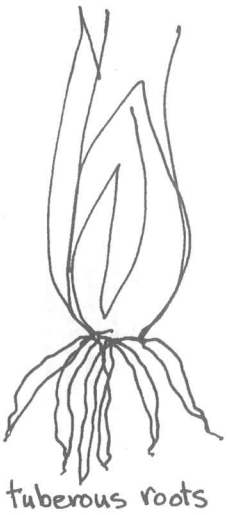
Few grasses and no large trees grow here. The dense thicket consists mainly of a variety of 3-4m high thorny shrubs and succulent plants with here and there, tall aloes and euphorbias standing out above the canopy. Climbing plants twine through and over the other plants. The undergrowth consists of dwarf succulents and bulbous plants. Many plants have developed interesting ways to help them tolerate the extreme environmental conditions. For example:

- *Leaves may be small or absent, or leathery and unpalatable*
- *Water is stored in succulent leaves or stems*
- *Many plants produce thorns and/or bitter or poisonous sap to protect them from browsing herbivores*
- *Plants are able to tolerate disturbances caused by trampling animals, Twigs and leaves may break off easily, but when they drop, they re-root quickly and form new plants*
- *Some plants have underground storage organs such as bulbs, corms, and rootstock that sprout quickly after good rains*
- *Most plants are not restricted to flowering during a specific season, but tend to bloom after good rain and then attract a variety of insects*
- *Many plants are pollinated by birds, and the fruits of most plants are also dispersed by birds*

Animals that live here have also developed interesting adaptations and have survived because of the almost impenetrable cover provided by the Valley Thicket. The survival of the flora and fauna of this region is threatened. A real effort needs to be made to save this unique biome. Everyone can make a contribution by learning more about the region, appreciating it's wonderful bio-diversity, supporting conservation programmes and growing indigenous plants in their gardens.


corms


rhizome


tuberous roots


bulb.

It is hoped that this umthamo will help you and your learners play your part in contributing to the conservation of this biome.

Some thoughts on using posters

We often take posters for granted in our classrooms. Lets stop for a moment and think a bit more carefully about their usefulness, and about the way teachers use them. The next activity asks you to **problematise** the use of posters. What do we mean by the word problematise? It isn't to be found in older dictionaries. In use it seems to mean to challenge, thoughtfully, something that is usually taken for granted as not being a problem. By careful, and critical thought and investigation you try to look at something with new eyes. In this way you hope to gain a new understanding.

Activity 3 - The use of posters in primary classrooms

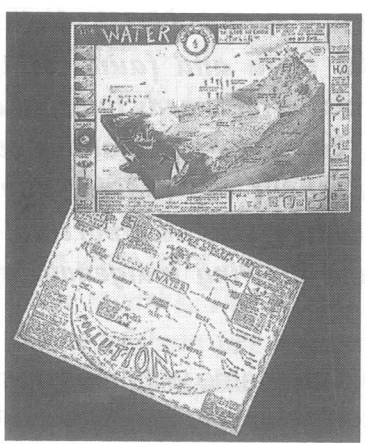
As a first step make a list of all the posters you remember from the walls of the classrooms of your primary school days. Do you remember any? Which ones made the greatest impact and why? Write down what you have learned about posters from this first step.

Next talk to some primary teacher colleagues about the purposes of posters in classrooms. How useful are posters? Get them to describe their best posters. Then try to list the criteria for a good poster. Not so difficult! What about the criteria for a bad poster?

Now do a little survey. Ask a few colleagues if they can remember when they last used a poster in their work. Why did they use it? And how effective was it's use?

Finally, interview some children when they are in the school grounds. Ask them to describe what is on the wall in their classrooms. Do they describe any posters? If they do, ask them to explain what they have learned from the poster.

Finish off this activity by writing a short piece in you journal with the title: 'the problem with posters in classrooms'.



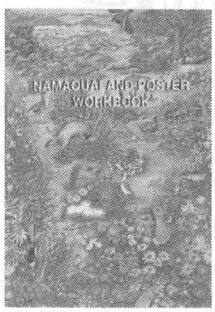
The Valley Thicket poster and workbook

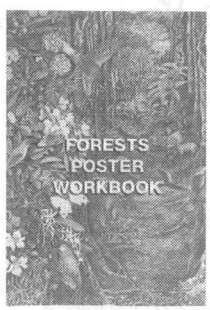
You get a large full colour A1 size poster that is beautifully conceptualised, designed and painted by the artist Jeanette Loedolff. The poster depicts plants and animals typical of the region in ways that reveal the ecological interactions between different organisms. You can work out who pollinates what. You can follow food chains. You can see different ways that plants are made use of by animals, and even by other plants. Of course the poster contains more plants and animals than you would ever see in any one place at any one time in nature because its purpose is to depict diversity and richness. It is worth taking the time and trouble to really explore the poster in careful detail.

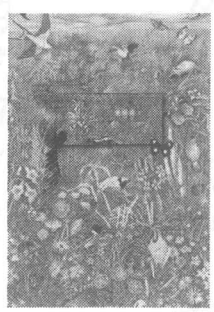
When you problematised their use, you probably realised that posters don't make much long term impact if they are not interacted with extensively. That is the advantage of the workbook. The workbook is about 32 pages and contains some very useful stuff. The poster is reproduced on the front cover. There is an outline drawing of the poster on the inside cover that is marked out into a grid that divides the poster up into 12 sections. This is to make identification easy as up to about 100 items are numbered on this page.

Then there is a key/legend/listing that makes it easy to find the name of any plant or creature represented in the poster. The bulk of the workbook contains brief, but interesting descriptions of each item from the poster. There is also a map to show the distribution of the vegetation type. Then the latter part contains carefully planned activities that relate to the poster and its effective use.

We believe that the poster will work really well with the key activities we suggest in unit 3 and unit 4 and will be a really valuable resource. We also know that you will use your initiative and find other interesting and imaginative ways to use this poster with your learners. The three women who compile the workbook, the poster artist, Jeanette Loedolff, Ruth Stone and Christien Malan would probably like to hear from you if you have interesting ideas to share. You could write to them at the following address: c/o The Botanical Society of South Africa, Private Bag X10, Newlands, 7725.







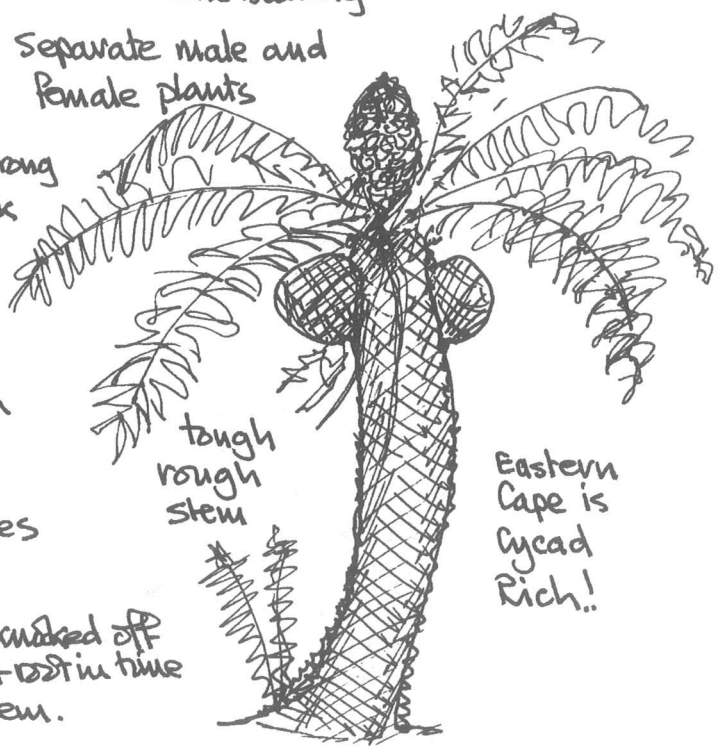
CYCADS

Very endangered. Heavy Fines and Sentences For harming Cycads or moving them!!!!!

Cone bearing

Separate male and female plants

Leaf with strong central stalk and stiff, hard leathery leaflets armed with Spikes and Prickles



tough rough stem

Eastern Cape is Cycad Rich!!

Reproduce in a range of ways

- Pollen From male cone transfers to female cone
- Spherical outgrowths of stem knocked off by large beasts - roll away + root in time
- shoots grow From base of stem.

Their survival into modern times is a measure of their resilience!

very ancient plants were found on Earth at the time of the dinosaurs - up to 200 million years ago

Aloe ferox - ikhala
- Bitter/Red Aloe

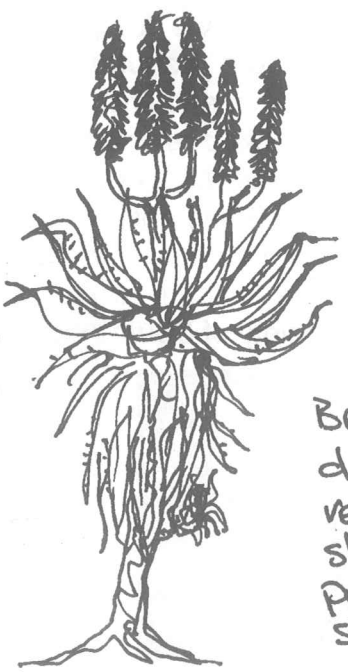
Very drought resistant

Reddish tinge to leaves protects From sun

Fleshy leaves retain moisture

Bitter Juice is harvested as a medicine

Spines and bitter taste deters browsers



Beard of old dry leaves remains to shade and protect the stem.

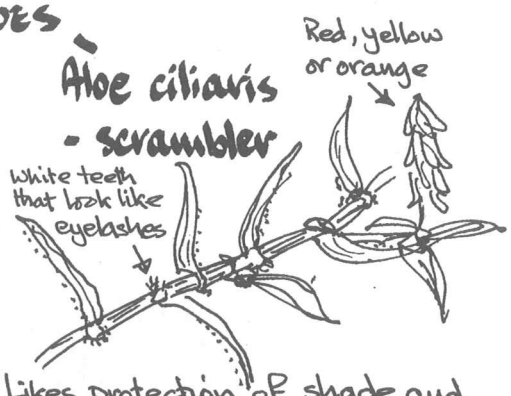
OTHER ALOES

Aloe arborescens - shrub aloe

also known as Krantz Aloe

Forms a low growing bush. Can be grown as a tough hedge or windbreak. Used in the past to form the wall of cattle kraal in parts of Transkei.

Aloe ciliaris - scrambler



Likes protection of shade and 'scrambles' through shrubbery. A good garden plant

Plumbago - an Eastern Cape

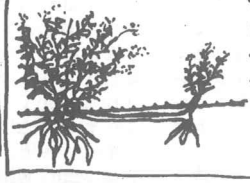
Plumbago is a straggly bush that grows in the coastal scrub of the Eastern Cape and on

the fringes of our forests

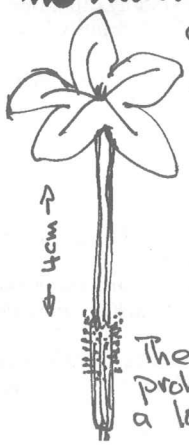
It sometimes scrambles through bushes and trees

It makes a good hedge

The Plumbago plant can spread and make more Plumbago plants without using flowers and seeds. The plant puts out a long, pink underground shoot to start a new Plumbago plant - a daughter plant.



The Plumbago flower.



Clusters of pale blue or white flowers are found at the tips of the branches. Each flower has a long thin tube and a star of 5 petals. The petals have dark lines that mark the way to the nectar. The pollinating agent is probably a moth with a long thin tongue.

The story of the sticky Calyx

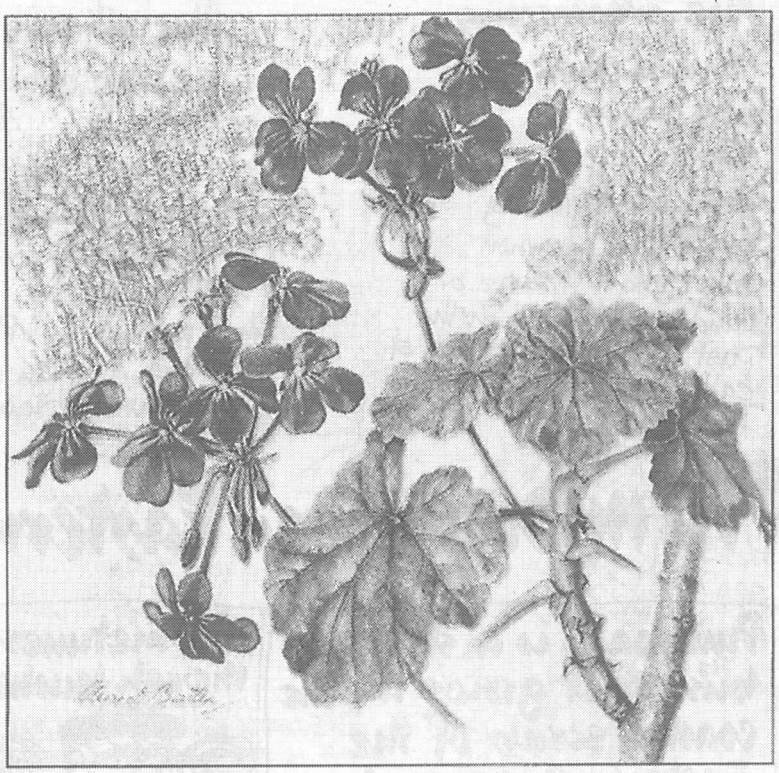
At first the Calyx protects the bud, Then the sticky hairs prevent ants and other insects from robbing nectar.

The brown dried out calyx with the seed inside sticks to furry animals and helps spread seed.

• A useful plant for the topic ukwanda

• Plant • a good plant to qualasela

• A plumbago for every School!



POPULAR PLANT PAINTED BY EL RESIDENT: The world's most popular garden plant, the pelargonium, which originated in the Eastern Cape and now graces many gardens and buildings in the northern hemisphere, painted by Auriol Batten, author with H Bokelman of *Wild Flowers of the Eastern Cape*, first published in 1966.

EC – cradle of world's popular garden plants

EAST LONDON — The Eastern Cape's tough environment has made it the cradle of some of the world's most popular garden plants, according to Kirstenbosch botanist and author Ernst van Jaarsveld.

"A botanical garden in this area is a must," he says in the latest issue of *Veld & Flora*, journal of the Botanical Society of South Africa.

The Eastern Cape is the only place where major ecological regions, called biomes, and vegetation regions merge: afro-temperate forest, Nama Karoo, fynbos, grassland, thicket, savannah and succulent Karoo.

Eastern Cape flora should be protected as a valuable source of garden and house plants, he says. The most popular garden plant of all, the pelargonium, originated here.

The popularity of garden plants is judged from sales at the annual Dutch garden and floral market in Alsmeer.

Pelargoniums have been rated top for many years, says Van Jaarsveld, and they grace gardens and buildings throughout the northern hemisphere.

Because Eastern Cape plants are adapted to fluctuations in climate and other disturbances they are ideal for gardening.

Plants which have evolved here can withstand droughts, heat and frost; poor soil, sun and shade. They can survive neglect and ill-treatment.

"Plants from the Eastern Cape ... are remarkably tolerant of interference, having evolved side-by-side with grazing animals. In their habitat grazing and trampling is a major driving force," Van Jaarsveld says.

Gardening too unsettles plants and species shaped by varied weather conditions and frequent disturbance cope best, like the Eastern Cape plants which have a good "garden-fit".

"We can safely predict that the chances of finding other international horticultural hits from the Eastern Cape is greater than anywhere else in South Africa," he says. — DDR

A local selection

ACCORDING to Ernst van Jaarsveld, the selection of garden and house plants from the Eastern Cape includes:

***Aloe ferox* (the Eastern Cape emblem), *Aloe arboresecens* and *Aloe africana*; spekboom (*Portulaca afra*), thicket spursage (*Plectranthus madagascariensis*);**

Ivy-leaved pelargonium (*Pelargonium peltatum*), red pelargonium (*Pelargonium inquinans*), zonal pelargonium (*Pelargonium zonale*);

Pregnant onion (*Ornithogalum longibracteatum*), cliff fire lily (*Cyrtanthus montanus*), hen and chickens (*Chlorophytum comosum*), mother-in-law's tongue (*Sansevieria aethopica*), ox tongue (*Gasteria excelsa*), Haworthia (*Haworthis cymbiformis*).

DD Thurs 6-3-2001

UPE plans to save thicket vegetation

By Justine Gerardy

EAST LONDON — The recent launch of the Subtropical Thicket Ecosystem Planning Project (Step) at the University of Port Elizabeth (UPE) highlighted the project's aim to develop a management strategy for threatened valley bushveld vegetation.

Co-funded by the Global Environmental Facility (GEF) and supported by the Department of Environmental Affairs and Tourism, the project will run for the next two-and-a-half years in tandem with planning for the Greater Addo National Park.

The focus is on mapping vegetation and threats, and designing a computerised decision-making system for spatial and conservation planners.

Speaking at the launch, leading botanist Professor Richard Cowling said one of Step's most exciting features would be its contribution to spatial planning and decision-making.

He said the project gave "tremendous opportunity to provide the conservation plan to municipal planners and decision-makers".

However, he also pointed out the capacity of some municipalities to implement and manage the process was questionable.

The study area is concentrated on the core of the valley bushveld vegetation type, known as the thicket biome, which overlaps with two internationally recognised centres of plant diversity, the Succulent Karoo and Albany Centres.

Step manager Dr André Boshoff said a key component of the strategy was a conservation plan being drafted by the Terrestrial Ecology Research Unit at UPE.

"The project will identify areas where a range of sustainable land-use types, such as game farming and ecotourism, can be conducted."

Areas that are critical for bio-diversity conservation and those suitable or unsuitable for sustainable wildlife based ventures will be identified.

"These ventures will create job opportunities where poverty levels are high and increasing," he said.

Acting director of the Eastern Cape directorate of Environmental Affairs and Step steering committee chairman Albert Mfenyana said it was vital the project convinced the public of the value and plight of thicket vegetation.

Meetings will be held with the local government and representatives of communities.

DD Sat 17-3-2001

Medicinal, botanical garden planned

By Justine Gerardy

EAST LONDON — A national botanical garden and indigenous medicinal plant nursery have been proposed for the former pineapple research station outside the city.

A business plan outlining the establishment of an environmental activity centre was submitted last month to the Department of Provincial and Local Government by the Buffalo City Municipality.

The plan will cost R4,5 million of Local Economic Development (LED) funds, to be spread over three years.

The aims are job creation and income generation through local economic development, and environmental conservation and education.

Core components are an indigenous and medicinal plant nursery, medicinal plant production services, a national botanical garden and other related cultural, environmental and tourism creation projects.

The plan estimates that 30 permanent jobs will directly result from LED funding and that a further 300 sustainable job opportunities will be created every year.

The medicinal plant component is motivated by the fact that the plants are used by 70 percent of South Africans, their decline in natural areas due to harvesting, and the multi-million-rand industry they generate.

Motivation for the botanical garden is that there is no coastal national botanical garden between Cape Town and Durban, the Eastern Cape's high bio-diversity and the province's focus on cultural and eco-tourism.

The research station was identified because of its buildings, infrastructure and location.

Discussions are under way between the municipality and the Department of Agriculture and Land Affairs.

It has been suggested that a Section 21 company be formed to manage the initiative.

DD Wed 11-4-2001

WEEKS

Unit 3 - Celebrating Indigenous Plants

Bringing Nature into the School Grounds

The final sentence in the introduction to the Valley Thicket poster workbook reads **everyone can make a contribution by learning more about the region, appreciatinig it's wonderful bio-diversity, supporting conservation programmes and growing indigenous plants in their gardens.**(see page 17 of this umthamo). This is a strong call for schools to get involved. Consider seriously the idea of dedicating part of your school grounds to the establishment of an indigenous garden.

A long term project of this kind is a wonderful idea for all sorts of reasons. Mainly, it would be a form of **redress**, in the sense that people, today, have been dis-inherited, or cut off from their deep cultural roots. This has happened for all sorts of reasons: irrelevant education syllabi, urbanisation, migrant labour and other apartheid policies of the past, modernity (the Coca-cola culture), and even something like cultural imperialism have all contributed. Rootlessness is a very dangerous thing. Plants wither and die when their roots are damaged, so what about people's spirits, and what about their emotional well-being?

But there are also other more practical reasons for using local plants to enhance the appearance of our schools. Read the following extract from the book *Bring Nature Back to your Garden* to find out more.

The term exotic refers to plants that have been introduced from abroad.

Why plant indigenous?

1. Because nature intended indigenous vegetation to belong here and it creates the type of habitat that will attract the widest variety of birds, butterflies, etc.
2. Although certain exotics will supply food to some bird species, only indigenous plants fulfil all the requirements for feeding, breeding, nesting, resting and roosting.
3. Exotic plants often fall into one of two categories:
   - Because the environment is unsuitable they have to be pampered with water, fertiliser and insecticides.
   - Because the environment is suitable and they have no natural enemies, they may get out of hand and spread uncontrolled, eventually replacing our indigenous vegetation. Some species have even invaded our nature reserves. As they only support a limited number of creatures, they have indirectly caused certain birds, mammals and insects to become endangered. (See chapter on Alien Invaders.)

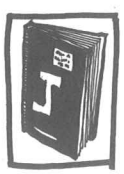
Pied Piper

4. Once they are established and provided that they are planted in the right place, healthy indigenous plants generally never have to be watered again. You will only use your hosepipe to wash your car! For example, no one waters the plants in our natural parks.
5. Like exotics, most indigenous plants will grow faster with fertiliser. However, it is not essential as they are adapted to the soil if you choose the right plants for your area.
6. There is no reason to use insecticides on indigenous vegetation, as these plants will not usually be killed by insects. On the contrary, many of our plants are naturally stimulated to grow faster when attacked by insects. Remember too, that every caterpillar killed means a bird deprived of a meal or, worse, the bird could be killed by eating the poisoned insect. So by planting indigenous you should be able to pack your poisons and spray-gun away permanently! Unfortunately, humans have introduced some foreign insects, for example amaryllis caterpillars, that will kill certain indigenous plants such as Clivias. (See chapter on Imported Garden Pests.)
7. The only continuous work you will have in your indigenous garden will be to trim back, as the plants may grow more vigorously than you require. This will not harm them, as in nature they are browsed by animals. *(Botha,1996: 4-5)*

Gardens have been around for a long time. Think of the hanging gardens of Babylon, one of the seven wonders of the ancient world. The writers would like to pose a question for you to consider. Would the *garden of Gethsemane*, that we read about in the bible have celebrated mostly alien or exotic plants?

The Status Quo of School Gardens

The term 'status quo' means the 'present unchanged situation or state'. It might be useful to spend a little time reviewing the current state of most school gardens. Spend a little time picturing in your mind's eye the plants in the school grounds of the primary school that you yourself attended. Then take your journal and write a brief descriptive passage that records what you remember.



Then take a stroll around the grounds of the school where you now teach. Pay careful attention to the plants and the condition of the earth. What do you find? What don't you see? What do you think? What do you feel? Then try to capture this experience in a careful piece of writing in your journal.

In umthamo 39 (pages 12 - 17) you read about some Eastern Cape schools' attempts at greening their schools and about permaculture projects. In our experience visiting schools, the situation regarding school gardens is not very encouraging.

One usually sees some overgrown and neglected vegetable garden beds to one side of the school, a relic the old sexist curriculum where the boys did gardening outside, while the girls stayed inside and did needlework. In many schools there

have been some attempts to make small flower gardens at the edge of the varanda, if there is one, or near the classroom door. A few straggly plants are struggling to survive the dryness and the assault of the thoughtless feet of learners pushing to get to the classroom door. They are planted in a major thoroughfare. And the heat of the sun reflects mercilessly off the white walls. It reflects back onto the flower beds, exacerbating the dryness (nice word, 'exacerbating', it means making much, much worse).

Elsewhere there is dry, bare, dusty earth where the children play, and perhaps some overgrown grass and weeds where they don't. There is little or no shade from the heat of the sun, and little or no shelter from the force of the wind. Could the picture not be different?

A place of shelter from bush aloes

In some cases where there are gardens the plants seem to be treated like soldiers. They are controlled, spread out in rows and kept apart or isolated from their peers to bloom alone. There is little or no natural glory in that.

Something to think about

An important question as we try to heal our land in the 'New South Africa' is to what extent we are serious about developing what could be called a **culture of caring**? What are we saying about our commitment to **caring** if we neglect and even hurt, or 'tread heavily' on the earth around our schools.

Did you take note of the quote on the outside back cover of umthamo 42? Substitute the words 'school grounds' for the word 'body' and it now reads: *The school grounds are a graphic expression of the school's total physical , emotional and mental state.* What explicit collective message does your school send out to the world based on the language of appearances when it comes to your school grounds?

Something to Aim For

It would be wonderful if each primary school in the province could set itself some short term goals to start the process of developing their school grounds so that the heritage plants of the province are represented, celebrated and protected. Here are some hopes for the future.

We would show that we appreciate and valued our heritage plants if at least.....

- Every school had a proud and well protected umNga (Acacia karoo, Thorn tree or Mimosa) growing unharmed to maturity. Learners could observe and study the birds and insects that co-exist with the tree.

- One large fiery aloe (Aloe ferox, bitter aloe), the symbol associated with our province and celebrated on the EC car number plates, has a prominent place to grow free from harm.

- A stand of a cluster of isilakati (Agapanthus praecox) plants greets the learners with tall heads of bright blue flowers when they return to school after the Christmas holiday.
- If there is a damp or shady place, perhaps behind the toilets or near the water tank, inyibiba (Zantedeschia aethiopica, arum lily) is encouraged to flourish and perhaps attract the small white tree frog that likes to hide in wait for flies and beetles that come for pollen.

- A large attractive clump of intelezi (Bulbine frutescens) thrives so that any learner stung or bitten by an insect, can break off a leaf and squeeze some soothing jelly-like juice over the itchy spot.
- And scrambling over the school fence, or forming a hedge, or even standing alone as a bush one finds the bright orange-red flowers of the icakatha (Tecomaria capensis, cape honeysuckle) which are so full of sweet nectar for the ingcungcu (sunbird). The curve of the bird's beak matches the curve of the tube of the flower exactly. And the stamens and stigma are well positioned to dust and pick up pollen from the head of the bird.

- In the same way, the beautiful pale blue flowers of the plumbago (umabophe or umthi wamadoda) grace the grounds of our schools and not just the gardens of people elsewhere in the world.
- A **policy** has long been in place to plan, design and begin the process of developing a garden of indigenous plants. Such a garden exists and is loved and cared for by the whole school community, thus providing "food" for the soul and the spirit.

How can we make this happen? The first part of the key activity aims to help you do just that. It is important to remember that when you are involved in a project of this nature it can be considered as part of **Technology Education**. If you go back to umthamo 7 and look at page 16 to 18, you can remind yourself of the process of technology. You and your learners and anyone else you care to involve, will need to follow the same process to solve the problem of developing an indigenous garden in your school grounds. So before you start with the key activity go back and carefully remind yourself of what is required.

Activity 4 - Key activity - Designing and Developing an Indigenous School Garden

You know what the **task** or **problem** is, so the first thing you and your learners need to consider are the **restrictions**. You need to make a list of the restrictions that will include things like **time** available for work, **costs**, and **materials**.

This will help you decide on what is realistic in your given circumstances. It will also lead you into the next step which involves **investigations**. Here you will need to survey the school grounds to select possible sites for the garden. Try to get the learners to think of the factors that they need to talk into account when selecting a site. Make lists of the pros and cons of each site. You might want to ask groups to select a site each and develop a proposal in favour of that site.

You could do a lot of interesting **language and Communication** work as learners prepare their posters of site information, and do oral presentations and field questions from the floor before the whole class takes a vote.

Once a site is selected the Planning/**devising** stage begins. This will involve plans, drawings, perhaps even a model to show the layout and variation in height.

When all this has happened, you can start with the actual work, the **making**. This won't happen overnight, but will be part of a long ongoing process that will involve a great deal of **assessment** and quality control. It will probably also require that you and your learners revisit some of the stages again to make modifications in the light of experience.

Sharing in all of the above experiences will be of great value to your learners in terms of **lifeskills**.

Again we are expecting you to make your own judgements about what challenges your learners are ready for, and people will be asking you about this at portfolio time, and during affirmation.

Keeping Records

It is very important that you all keep records of the work as it progresses. This can take the form of written work, drawings, maps, journals, and even photographs. Remember that this is the **key activity**, even though the hand-in assignment was based on activity two. You will

be required to give very clear evidence of this work in your portfolio presentations.

The whole point about a problem solving project like this is that the participants learn from experience as they go along. It would be counterproductive to simply give you a recipe to follow. Nevertheless, in the following section we give you some things to consider so that you can give informed guidance to the learners if and when they need it.

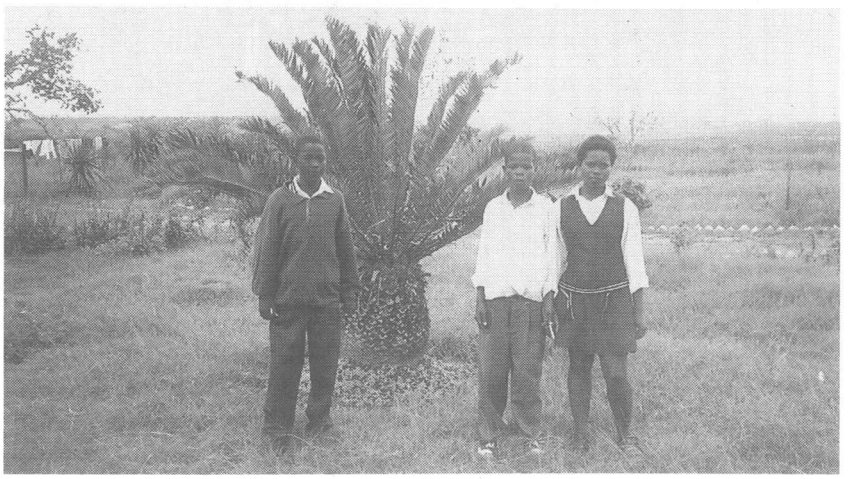
Useful Advice

The most crucial thing is that you **never** damage, or rob nature of any **rare** or **endangered plant**. If you are not sure, **leave the plant alone!** The whole point is to **help** not to **harm**. The officials of Environmental Affairs and Tourism will be the people to consult and will be only too willing to work alongside you and give you advice. After all that **is** their job, and they are paid with tax payer's money, and you pay tax, and your learners will be paying tax one day.

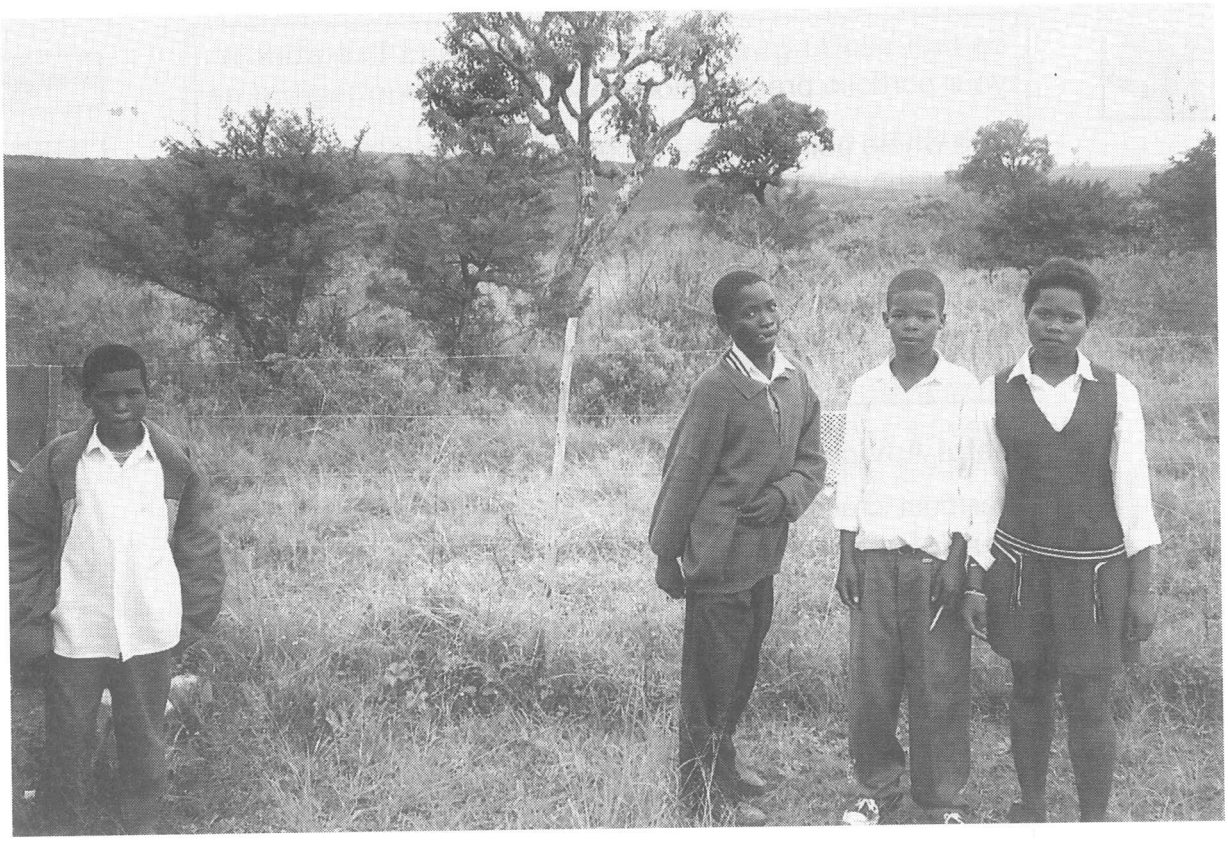
Starting with what you have got

Some schools may be lucky enough to already have some natural plants growing in the school grounds. If they are there naturally, or have survived so far without special care and attention, then that is really the best place to start. You and your learners should look in the veld for the same type of plant. Then you can find out what other plants are found growing naturally alongside it, under it (as ground cover or bulbs), or through it (as creepers or scramblers). You can try to collect and grow those that look as if they will transplant readily or can re-root themselves naturally.

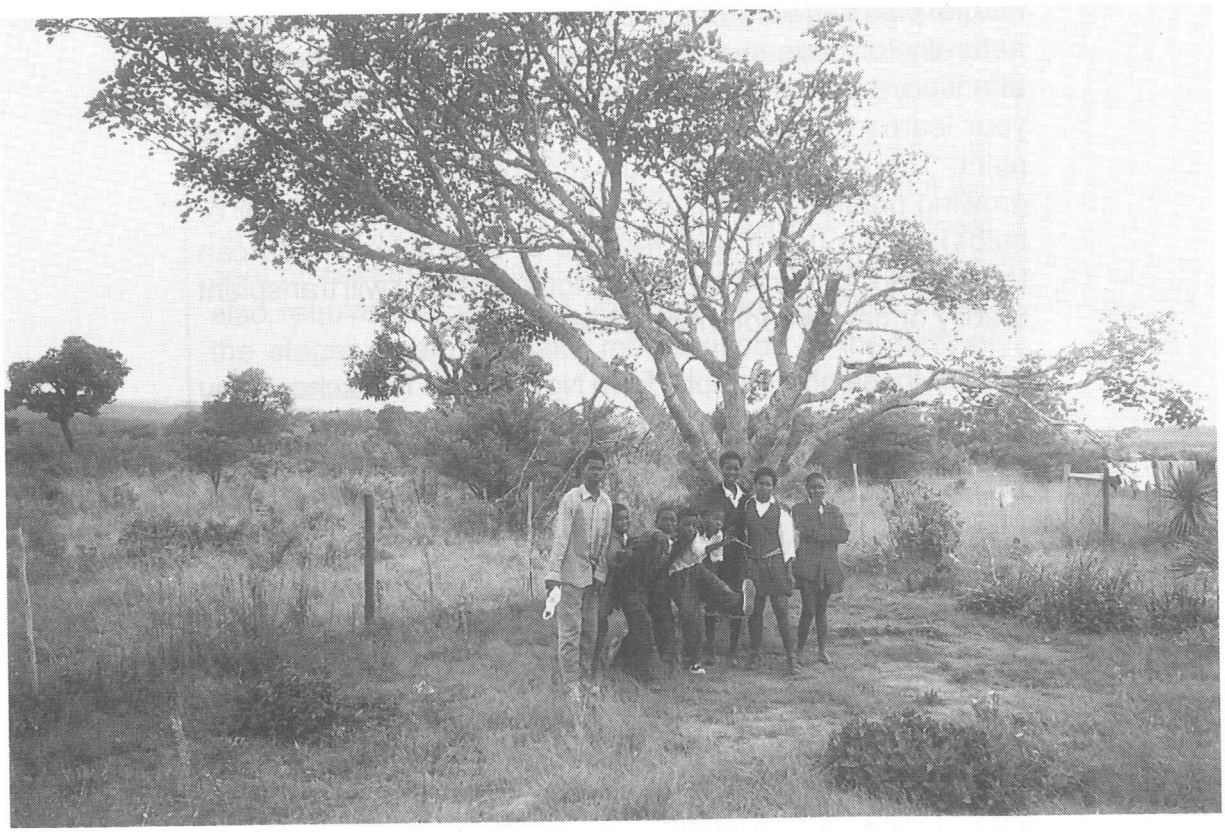
Look at these photographs from Ngwevana. The school may be very poor in facilities, but it is one of the richest we know of in terms of heritage plants.



Cycads have grown on the school grounds since before anyone can remember.



umsenge and umsintsi trees, as well as valley thicket in the distance.



Some really tough plants like wild figs (umkhiwane) and certain ferns grow in unlikely places like cracks in walls and they can be moved to a more comfortable position.

Selecting and finding plants

All the cities and most of the bigger towns in the Eastern Cape have commercial **Nurseries** that sell plants to the public. They will have expert staff who are trained to give advice, and indigenous plants are becoming more and more popular so they will know a lot about them. If you tell them what your project is about, they may well be prepared to help you with cheaper prices, or even give you plants. If they are reluctant to do this, point out to them that your learners are their customers of tomorrow.

Many municipalities and councils will have their own plant nurseries and parks. They may also be able to help you with advice and free surplus plants.

Be on the look out for what is being discarded or thrown away. The picture below shows learners from Ngwevana with plants rescued from the municipal tip in Amalinda. The strelitzia rootstock with its fleshy roots will soon produce leaves if planted. And the Aloe tenuior will transplant quite easily and produce yellow flowers. They cost nothing at the dump, but might have cost as much as R50 at a nursery.

Do you have learners whose parents have gone to seek work in cities, and who may be domestic workers, or gardeners for wealthy folk with large gardens? They might be able to help with indigenous plants for your school. As a language exercise your learners could compose a letter of polite request asking for help with indigenous plants, that could be presented to the employer by the child's parents. That would be a purposeful, real reason for writing in the **additional Language** (see umthamo 41 page: 17). Seeds and succulent plants or bulbs always travel well. Remind and help the learners write thank you letters if you don't want a source of plants to dry up.

Be alert to places where natural vegetation is being destroyed. Perhaps land is being cleared for a new building or township. Ask for permission from the contractor or owner to remove and protect any interesting plants that would otherwise be destroyed. They might even help you with labour and equipment. Don't forget to consult with the experts, nature conservators, or forestry officials, if you are not sure about the plants you are taking. Ignorance of the law is no excuse! And damaging something rare or endangered is worse than a crime.

Layout

This is the design side of your project. There are a few quite important things to consider. The first is **size**, tallest to shortest, because you don't want larger plants in front to hide the shorter ones behind. If you have a circular place then it should be taller plants in the middle lower ones towards the edge.

The next consideration is **position**. Sun loving plants should be to the North of taller plants, and the opposite with shade loving plants. The more you are prepared to take walks in the natural bush, the more you will become aware of what likes to grow where. Climbers and scramblers need something tall to scramble through or climb up. So they might do well near a fence or old tree stump, or alongside some sturdy taller plants.

Then think about **clumping**. Even the brightest of flowers loose their effect if they blossom in isolation. Think choir, where you put your altos together and your tenors where they can really sing as if with one voice. It is the same with plants. They make more of a show in a cluster.

Finally **shape** is important, and again take your cue from nature where straight lines are rare. Curves are much more relaxing and pleasing to look at.

Stone Mulching

Mulching is something you do to help the soil hold water. Vegetable matter like humus or compost is the conventional way to mulch and improve the soils water retention. But when have you ever turned over a stone or picked up a brick and found bone dry earth underneath? Stones and rocks are also very much part of nature. If you can take the trouble to collect interesting looking rocks then they serve two important functions in a natural garden. They cover bare earth and prevent weeds from taking over. And, most important, they help retain water. They can also be used to retain, or hold soil at different levels. This brings me to the final point.

Flat is Boring

If you can vary the height of the ground as well as the height of the plants, it makes for a more interesting garden. Also plants that like less moisture can be planted higher so that the water drains away from their roots first. A good way to vary the height of a garden is with rubble or waste. This can be piled up towards the centre of a circular shaped garden, or towards the back of a garden against a wall or fence. Then the rubble should be covered with good topsoil and the soil held in place with rocks. Again, remember nature doesn't lay rocks in straight lines. So vary the size and position of the rocks. Try to place them so that you form pockets of earth for the clusters of plants you have in mind.

Tulbaghia violacea

DESCRIPTION:
Height: A fast-growing, bulbous plant to a height of 50cm.
Leaves: The strap-shaped leaves grow to 30cm long and 1,5cm in width. They are dark green, leathery in texture, and smell strongly of garlic.
Flowers: Umbels of up to 20 violet flowers appear from December to April

DISTRIBUTION: A drought resistant plant from the Eastern Cape, KwaZulu-Natal, the Northern Transvaal and as far north as Zimbabwe

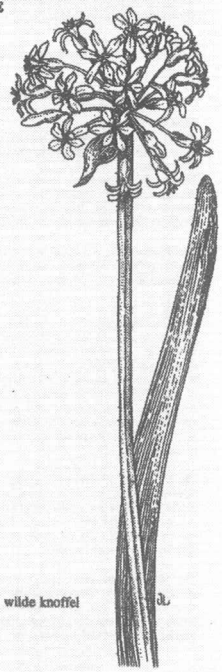
USES:
The bulb is used as a remedy for pulmonary tuberculosis and to destroy intestinal worms. A cold water extract of the entire plant has been shown to be lethal to several types of bacteria.

The Zulu use the leaves and flowers as spinach and as a hot, peppery seasoning, with meat and potatoes. They also use the bulb to make an aphrodisiac medicine.

The Rastafarians I interviewed eat copious amounts of wild garlic and chilli during winter to keep the blood warm and to stop aches and pains. They reported that an infusion can be made by soaking the bulb and leaves in water for a day or so; washing the whole body in this is very good for rheumatism, arthritis and to bring down a fever. To clear up coughs, colds and 'flu, they add a bulb to boiling water and drink this mixture. They also told me that wild garlic is a very good snake repellant. The Zulu plant wild garlic around their homes for the same reason.

GROWING TIPS:
T. violacea grows very easily in most soils. It can be used as an edging plant along the front of an informal border or along a pathway, makes a very attractive rockery plant when planted in small groups, and can also be mass planted to form a ground cover, in sunny or partially shaded positions. It grows well in poor soil, but thrives in well-drained soil containing plenty of compost. Keep the soil moist during spring and summer, and decrease the amount of watering in winter. Propagate from seed or by dividing larger clumps; however, once these clumps are planted they are best left undisturbed for as long as possible.

FAMILY : ALLIACEAE
Tulbaghia violacea



English - Wild garlic
Afrikaans - Wildeknoflok, wilde knoffel
Zulu - Icinsini
Sotho - Mothebe

Salvia africana-caerulea

DESCRIPTION:
Height: A rewarding shrub between 1,5m and 2m tall which branches sparsely from the base.
Leaves: Oval, aromatic leaves are greenish-grey because of the short, felt-like hairs and wrinkled texture. The underside is dotted with small glands.
Flowers: Covered with funnel-shaped, bluish-purple flowers in spring.

DISTRIBUTION: Occurs naturally in coastal fynbos and on rocky slopes in the Western and Eastern Cape Provinces.

USES:
S. africana-caerulea tea is popular in South Africa and overseas. It is taken to treat coughs, colds, 'flu and other chest complaints. Pour a cup of boiling water over a tablespoon of leaves, allow to draw for a few minutes and sip frequently. The tea can be sweetened with honey and with a slice of lemon it makes a refreshing drink.

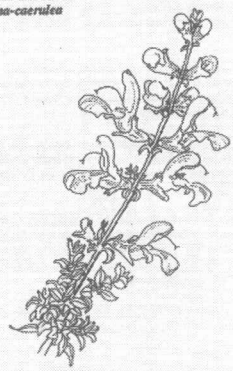
An old household remedy for abdominal troubles such as colic, flatulence, diarrhoea, heartburn and indigestion was an infusion made by steeping a twig of sage in 2 cups of boiling water for 10 minutes. This was then strained and 3 tablespoons each of Epsom salts and lemon juice added. This was sealed and stored in an airtight container and a small dose taken until the patient was cured. This remedy is still used for the same purpose today, and is frequently given to a cow after calving to assist in the expulsion of the afterbirth.

Many people find *S. africana-caerulea* an excellent substitute for the cultivated sage, *Salvia officinalis*. The Rastafarians use it to cure many ailments including chest problems, colds, kidney infections, stomach troubles and women's ailments. They make an infusion with a few leaves in a cup of boiling water. In the case of a serious cough and sore throat large amounts of the infusion are drunk after a coughing fit to soothe the throat. Even chewing a leaf will ease a sore throat and a cough.

The attractive blue flowers are ideal for the vase or to add to a pot pourri bowl. Even though the leaves are not as attractive, they can be added as they have a delightful aroma.

GROWING TIPS:
S. africana-caerulea is attractive in a mixed bed in the garden or in a rockery. It likes a warm, sunny position which should be sheltered from frost. It grows well in nutrient-poor, well-drained soil. Like many salvias, it does not like waterlogged soil as this will rot the roots. Propagate from cuttings or by seed which should be planted in tins in spring. The seedlings can be transplanted into the garden when only a few centimetres high.

FAMILY : LAMIACEAE
Salvia africana-caerulea



English - Purple sage, aromatic sage, wild sage, blue sage
Afrikaans - Wilde salie, bloublomsalie, bloublom

These facts and drawings are reproduced from the Share-Net booklet "Discovering Indigenous Healing Plants" compiled by Alex Dyson and illustrated by Jeanette Loedolff (June 1988).

Mentha longifolia

DESCRIPTION:
Height: An erect perennial up to 1 metre with 4-sided, much-branched, reddish brown, densely hairy stems.
Leaves: Pungent smelling leaves are dark green and smooth on top, and lighter grey green and hairy underneath.
Flowers: Small (4mm long) white, pink or lilac coloured flowers.

DISTRIBUTION: Common along streams in the Transvaal; also in the Cape Provinces, Orange Free State, Swaziland, KwaZulu-Natal and Lesotho.

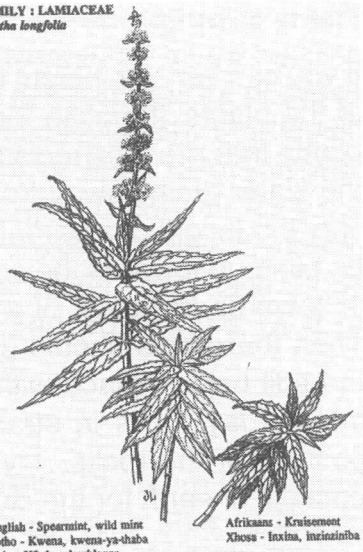
USES:
The early colonists prized this plant as an antispasmodic and carminative and used an infusion to treat flatulent colic, indigestion and colds. Use a quarter of a cup of fresh leaves to one cup of boiling water, let it stand for three minutes and then drink. Mint contains an essential oil with menthol, a crystalline alcohol used as a local anodyne. Chewing a fresh leaf gives relief from heartburn and colic, aids digestion and relieves flatulence.

Externally it can be applied to glandular and other swellings. The fresh leaves rubbed onto pillows and blankets, make an excellent mosquito repellent. In the Kokstad, Butterworth, and Ceferville districts, the Xhosa were reported as making a tea from fresh or dried leaves.

HISTORY:
The name Mentha is derived from Greek mythology. Mentha was a nymph who was loved by the god Pluto whose jealous wife Proserpina turned her into the herb mint. In 1694 a Dr Westmacott wrote that mints were well known to young Botanists and Herb Women in apothecary shops. In the shops there were "the dried herbs, Mint water, Spirits of Mints, Conserve of the leaves, the Simple oil and chemical oil".

GROWING TIPS:
When planting mints, remember that they are heavy feeders. Once the plant has depleted the nutrients in the soil, it will send out runners and put down roots in fresh soil. Cut the plant back frequently to encourage new growth. Mints can be grown in containers, the advantage of this being that it stops them overrunning the garden.

FAMILY : LAMIACEAE
Mentha longfolia



English - Spearmint, wild mint
Sotho - Kwena, kwena-ya-thaba
Zulu - Ufuthanelamhlanga
Afrikaans - Kruisement
Xhosa - Inxina, inzinziniba

Leonotis leonurus

DESCRIPTION:
Height: A showy shrub up to 2m tall, with hairy, four angled leafy stems.
Leaves: 8-18cm long, coarsely toothed, hairy, and lance to oval shaped with short stalks.
Flowers: Brilliant orange or white in the case of *L. leonorus* var. *albiflora*. Woolly corollas are 5-15 cm long with long upper lips and much smaller lower lips. The upper lips remain in good condition for several days but the lower lips wither within a few hours. Stamens and style do not protrude.

DISTRIBUTION: *L. leonurus* grows wild in all the Cape Provinces, KwaZulu-Natal and Northern and Eastern Transvaal. It is one of the oldest cultivated South African plants, having been grown in Holland in 1663.

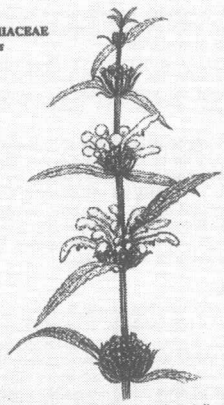
USES:
The Khoikhoi were particularly fond of smoking *L. leonurus* instead of tobacco and used a decoction of the leaf as a strong purgative. The plant is said to be a very good restorative. The early European colonists made a decoction of the leaves, twigs and flowers to treat serious skin eruptions, even leprosy. An infusion of 2-3 cups of leaves, stems and flowers in 1 litre of boiling water is left to steep and cool. This can be added to the bath to provide relief from muscular aches and pains, itchy skin and eczema. This same infusion acts as an antihistamine and an antiphlogistic when dabbed onto boils, sores, bites, bee stings and even, it is reputed, scorpion and snake bites.

The Zulu make an infusion of the above-ground parts for coughs and colds; this is taken orally and as an enema. It is also used to treat similar ailments in cattle. They use the roots to make a cold infusion to treat snake bites; this is taken orally and poured into the fang punctures. The Zulu and Xhosa make a decoction using the whole plant and sprinkle it inside and outside their homes as a snake repellant.

The Rastafarians make an infusion using Bloublomsalie (*Salvia africana-caerulea*), Kankerbos (*Sutherlandia frutescens*) and *L. leonurus*. They use this to treat asthma, diabetes, respiratory problems, high blood pressure, cancer and skin problems. They report that this is one of the most popular herbs, and that it makes a very good health giving tea.

GROWING TIPS:
This attractive garden plant is very easy to grow and thrives almost anywhere. It should be cut back after winter to keep it attractive, and to encourage new growth. It requires a warm, sunny position in light, well-drained soil. In areas of frost, mulch should be added to ensure a good flowering period. Propagation is easy and may be done by dividing the woody rootstock, taking cuttings, or sowing seed in September.

FAMILY : LAMIACEAE
Leonotis leonurus



English - Red dagga, wild dagga, wild hemp, lion's ear/tail, minaret flower
Afrikaans - Klipdagga, wildedagga
Xhosa - Umfinoafinoane
Sotho - Lebake, levake
Zulu - Imunyane, umunyane

Jasminum multipartitum

DESCRIPTION:
Height: A rapidly growing climber up to 2m with a spread of not more than 5m.
Leaves: Bright, glossy evergreen leaves are ovate to lanceolate in shape.
Flowers: Many star-shaped, strongly scented white flowers appear in spring.

DISTRIBUTION: *J. multipartitum* is native to warm dry parts of the Eastern Cape, KwaZulu-Natal and Eastern Transvaal. It grows in deciduous woodland amongst rocks and small trees, where it can get support.

USES:
J. multipartitum is a much loved garden climber and, if its stems twine around one another, it can form a shrub. It can be trained over a tree, fence or wall producing a spectacular sight when it flowers. Its flowers are among the largest of the jasmine family.

Dried jasmine flowers can be added to regular tea to give it a sweet refreshing taste, or to hot lemon and honey to make a refreshing drink which soothes a sore throat. Both drinks are very good for easing tension after a stressful day and for relieving indigestion.

Jasmine flowers can be used to make a relaxing bath lotion. Add a cupful of flowers to a bottle (375 ml) of white grape vinegar. Stand this in the sun for a week, adding a few fresh flowers occasionally. Strain, add a few more fresh flowers, and the lotion is ready for use. Add half a cup of lotion to your bath, or use as a hair conditioner.

Spring time jasmine flowers are the best for pot pourri; they give a delightful sweet smell that lasts exceptionally well.

GROWING TIPS:
J. multipartitum is easy to grow, and provided that it is planted in good, well drained, loamy soil in a warm position with plenty of moisture during the growing period, will grow at least 1m per year. It can grow in full sun or partial shade and tolerates winter drought and moderate frost. Pests include aphids and caterpillars, but there are no serious diseases. Propagate from cuttings or seed from October to December.

FAMILY : OLEACEAE
Jasminum multipartitum

English - Wild jasmine, many-petalled jasmine
Afrikaans - Wilde-jasmyn
Zulu - Uswazi

The booklet records the plants of the herb and fragrance gardens at Kirstenbosch National Botanical Gardens in Cape Town.

Cotyledon orbiculata

DESCRIPTION:
Height: Fast growing succulent usually forms a shrub to 60-90cm.
Leaves: The name pig's ears is derived from the oval shape of the leaves. They are succulent, up to 10cm long, and grey-green with a glossy red margin.
Flowers: The flower-stalk grows up from the leaf cluster and bears a head of drooping flowers. The orange-red tube opens into 5 curled-back, pointed petals.

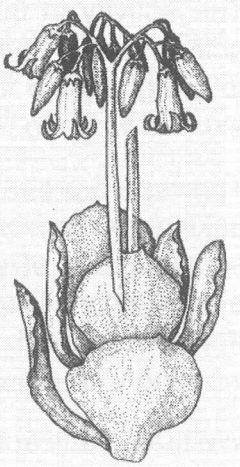
DISTRIBUTION: Found in between rocks and scrub in grassland in KwaZulu-Natal, Orange Free State, the Western and Eastern Cape Provinces, Swaziland and Lesotho.

USES:
The physician C. Pappe wrote a remarkable book, *Indigenous plants used as remedies by the Colonists of the Cape of Good Hope*, in 1847. Among the plants he listed was *C. orbiculata*, which was used in the treatment of epilepsy. This use was confirmed recently by an enlightened medical practitioner.

Many South Africans apply the fleshy part of the leaf to soften and remove hard corns and warts. The Southern Sotho use a dried leaf as a protective charm for an orphan child and as a plaything; they also use the plant to cure many diseases. In the Willowmore district the heated leaf is used as a poultice for boils and other accessible inflammations, in particular earache.

GROWING TIPS:
C. orbiculata is an ideal plant for the rockery. It requires a sunny position for good leaf coloration. For good growth it should be given light, well-drained soil containing plenty of compost and should be allowed a period of rest without water. The species in the Cape Provinces should be watered well in winter and little during summer. The plant is propagated easily by planting portions of the stem in the ground. Leaves will also grow roots, but not as easily. Growing *C. orbiculata* from seed requires care, particularly in the early stages. The best time to sow the seed is in spring, and they should be kept moist but not waterlogged. Once the seedlings have reached 2-4cm they can be transplanted.

FAMILY : CRASSULACEAE
Cotyledon orbiculata



English - Pig's ear
Sotho - Seredile
Xhosa - Iphewula
Zulu - Intelezi
Afrikaans - Plakkie, platjies, varkoorblare, varkoor, kouterie

Clematis brachiata

DESCRIPTION:
Height: A perennial climber which reaches an average height of 4m.
Leaves: Tapering leaflets with notched edges are arranged in threes. Upper surface dark green and glabrous, underside light green with small hairs.
Flowers: Creamy-yellow flowers are sweet smelling and very attractive. Flowering time usually late summer and autumn.

DISTRIBUTION:*Clematis brachiata* is found throughout South Africa, climbing over rocks, bushes, trees and fences.

USES:
The name "traveller's joy" indicates that this plant was used medicinally by the early colonists. When travelling, leaves were placed in the shoes to ease blisters and sore feet, and packed under the saddle to prevent saddle sores on horses. On a hot summer's day, fresh leaves were pushed into the crown of a hat to keep the wearer cool and energetic and prevent heatstroke and sunstroke.

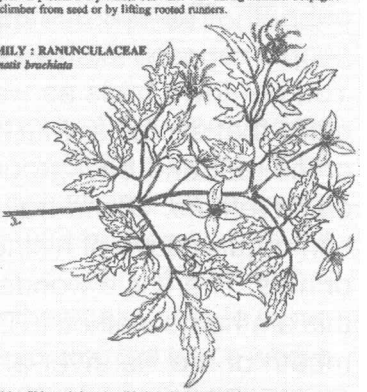
The Zulu use an infusion of the leaf and stem for mouth ulcers and also as an enema for abdominal disorders. The Xhosa, Zulu and the Sotho make a refreshing tea to ease headaches, coughs, colds and other chest ailments. Add one quarter cup of fresh leaves to one cup of boiling water, allow to draw for five minutes, then strain and sweeten with honey to taste. For immediate relief from a heavy cold, the Xhosa bruise the stem and sniff it, which induces sneezing due to the pungency of the plant.

The Tonga use a hot decoction, similar to that used by the Xhosa, Zulu and Sotho, for steaming patients suffering from malaria and colds; the decoction is often drunk as well. Sometimes a few drops of the plant sap are inserted into the nostrils for severe head colds.

Take care when using this plant as the leaves, when chewed, produce an uncomfortable burning sensation in the mouth.

GROWING TIPS:
C. brachiata tends to spread rather fast, and in a garden with limited space it is best planted in a large container on a sunny patio. The plant may be trained against a trellis, or allowed to ramble over rocks or climb into a bush in a larger garden. It is deciduous and may be pruned back during winter. Plant in full sun or partial shade, in good garden soil with plenty of compost. It prefers a dry winter but water well during summer. Propagate this climber from seed or by lifting rooted runners.

FAMILY : RANUNCULACEAE
Clematis brachiata



English - Old man's beard, wild clematis, traveller's joy
Afrikaans - Klimop
Pedi - Maxope
Sotho - Morara, moranana-oa-mafahlo
Tonga - Maamba, mieni
Xhosa - Ityota
Zulu - Umdlonso

Bulbine frutescens

DESCRIPTION:
Height: Succulent perennial with stolons grows up to 30cm. Rhizomes are neither swollen nor bulbous and the roots are thin and woody.
Leaves: Straw-coloured leaves grow in a rosette pattern; they are smooth and fleshy with a tubular basal sheath.
Flowers: Many 5mm long yellow flowers are borne on a single stem.
Fruit: 3-chambered capsule contains ovate, black seeds.

DISTRIBUTION: *Bulbine frutescens* occurs naturally in the Orange Free State, KwaZulu-Natal, and in parts of all the Cape Provinces.

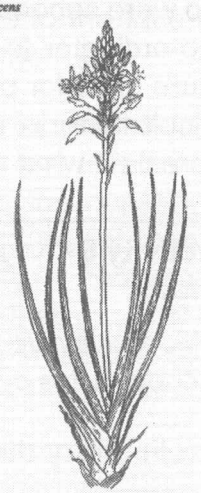
USES:
There are over 50 species of *Bulbine* and several varieties of *B. frutescens*, so there may be some confusion when using common names. For example, the name intelezi is a general term meaning anything with a sticky sap.

Bulbine species are very popular rockery plants and good for flower arranging. *B. frutescens* is also one of nature's finest medicinal plants. The fresh leaf produces a soothing jelly-like juice that is wonderful for burns, rashes, blisters, insect bites, cracked lips, prickly heat, acne, cold sores, mouth ulcers and areas of cracked skin. This plant is ideal to grow if you have children as it is a first aid remedy for daily knocks and scrapes.

The Rastafarians use *B. frutescens* to treat similar ailments. They make an infusion of a few fresh leaves in a cup of boiling water. The strained drink is taken for coughs, colds and arthritis. A warm poultice of the leaves applied to affected areas of the body is used to treat excema, arthritis, insect bites, areas of cracked skin, sunburn, rashes and burns.

GROWING TIPS:
This is an excellent drought, heat and frost resistant plant, and spreads rapidly to form a large attractive clump. In fact, it multiplies so easily it can soon become untidy, so it needs regular pruning. It should be planted in well-drained soil containing compost. It makes an interesting indoor pot plant. Propagation is easy from either seed or division of clumps and should be done in spring.

FAMILY : LILIACEAE
Bulbine frutescens



English - Snake flower, cat's tail, burn jelly plant
Afrikaans - Balsem kopieva, copaiba, geelkatstert
Sotho - Khomo-ya-Ntsukammele, sehlare-sa-pekane, sehlare-sa-mollo
Xhosa & Zulu - Intelezi

Copies of this useful booklet can be ordered from Share-Net, P.O. Box 394, Howick, 3290. Phone 033-3303931.

Unit 4 - Getting to know Nature

The activity in this unit forms the second part of the key activity, but is optional. The idea in the previous activity was to bring **nature** into the school. The idea in this unit is to explore ways to take the **school** into nature.

If you don't have valley thicket near your school, you can use whatever veld type is characteristic of your area:

Forest, Grassveld or Karoo.

This would probably work best with older learners. We are asking you to work with your class during school time, or a smaller group of interested volunteers after hours to develop a local Nature Trail that incorporates valley thicket vegetation. If you work with younger learners the second option of working with a group after hours is probably your best bet.

We trialed this activity with older learners at Mfunulwazi and it seemed to have a great deal of potential. The school is on the crest of a hill overlooking Mpintsho village. The whole area is surrounded by Valley Thicket.

What is a Nature Trail

A trail in educational terms is a planned walk along a mapped out path. There are sites, or stations along the trail where people can stop to observe certain things of specific interest. You get town trails as well. There is usually a pamphlet or guide that explains what is to be seen and gives extra details of interest and background information to support peoples observations. Some trails last just a few hours and others can require days of hiking and sleeping over in rest camps, or huts. There is a wonderful four day trail that the writers of this umthamo walked in December 1999, which starts at the mouth of the Kei river and follows the coast all the way to Gonubie just outside East London.

In the early 1970's when I was teaching in London at a primary school, I was one of a team of seven local teachers who were seconded one day a week for a term to work with a co-ordinator to develop little booklets that could support nature trails for primary pupils in the local parks. It is not a difficult thing to do. But you learn a lot, and it helps you appreciate what the environment has to offer.

Activity 5 - Key Activity - Part 2 - Developing a Nature Trail

This activity will follow on well from the previous activities. Although it is optional, we would urge you to give it a go.

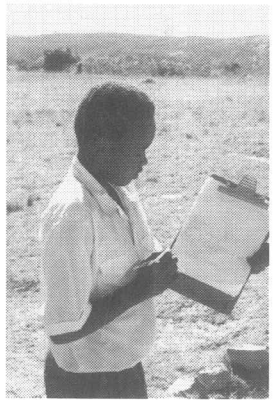
Preliminary discussion

You would need to start off by discussing what you mean by a nature trail and getting consensus that the learners

feel it is something worth doing. The agenda of the discussion can be quite open. You should talk a little about what plants you plan to look out for, and what you want to focus on. It could be something like how many different types of tree can we find, and what plants do we find associated with the different kinds of trees. Or perhaps you could focus on looking for signs of resilience in plants (see page 17). Make sure that you record what happens at this discussion and that you reflect on it's quality. You need to be able to share this with your peers at the final face-to-face session. You would also need to make it available at portfolio and affirmation sessions.

First Exploratory Walk

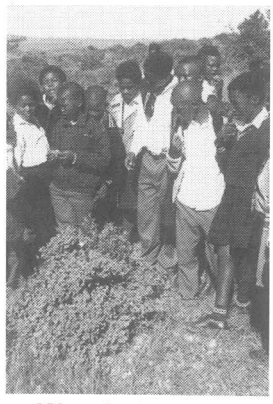
You need at least two clipboards so that people can write easily without a desk. If you don't have clipboards, then they can be easily improvised using stiff card and clothes pegs. The first clipboard is for a pair of learners who volunteer to map the route you take and note down the points of interest. The second clipboard will be for a pair of learners who list the plants as they are found.



Responsible for the draft map

Before you set out brief the learners about appropriate behaviour, and think about any possible dangers. The biggest fear might be of snakes, but when a large crowd walks in the bush, any sensible snake makes sure that it is well out of the way. If a snake is seen, it is best left alone. No-one should panic. Give the snake time to move away. Then just walk past calmly avoiding the place where the creature was last seen. Eating unknown plant parts or berries could be dangerous, and learners should watch out for thorns and stinging nettles as well as stinging insects like hornets. Another thing to be avoided is somebody letting a branch swing back into the face of the following person, especially if it has thorns.

Then as you go, stop when you see anything interesting. Spend a little time observing. Encourage learners to ask questions and to try to find answers to the questions raised. When you come across plants that are not known get a learner to agree to take responsibility for finding out the name and any specific information that may be of interest. They might need to break off a small part of a twig with some leaves, or flowers or fruit without harming the plant.



Wondering what plant this is?

A circular route is best, but the way will also depend on available paths.

Debriefing

When you get back to the classroom you can have a short debriefing session. Go over the experience and discuss what went well. What didn't you see that you were hoping to see? At Mfunalwazi we had hoped to see a large euphorbia (umhlonhlo). We could see one in the distance, but we would have had to take a different route. Learners knew that there were some near the stream in the village. It seemed that they grew more on the North facing slopes of the valley. We had walked in a South Easterly direction. We realised that we might have to try a different route. We thought that if we tried next time to head North first and then loop back towards the East, crossing so that we came back to the school from the South. It would be longer, but we might see some interesting variations in the way the plants grew. We had learned something interesting. The angle of the slope to the sun could effect the way plants grew.

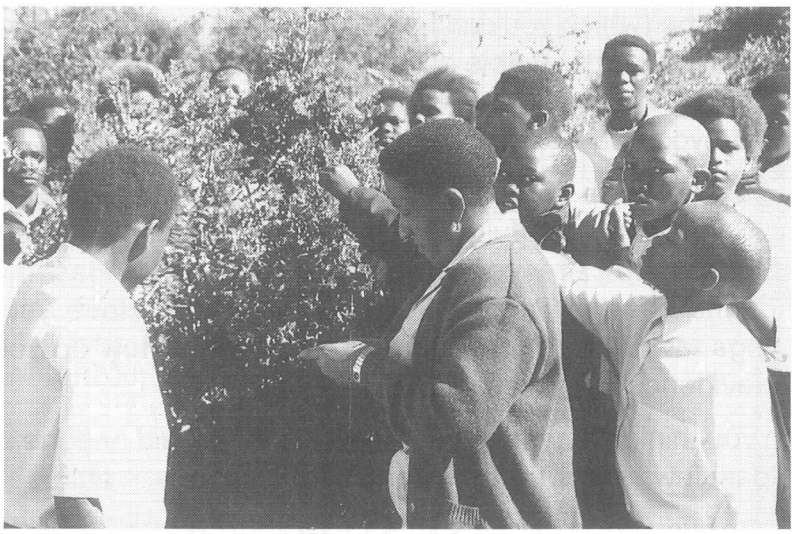
Research

Give the learners a few days to find out about the plants that were not well known. Let them report back and write up what they have found. In this way you are adding to your check list and increasing your knowledge base.

Learners skirt the edge of the valley thicket near their school

Second Exploratory walk

Now you want to consolidate and improve on what happened the first time. You might also want to think of a way of numbering or marking the larger plants that doesn't harm them, but makes identification easier. This is another technological problem to solve. You need something durable (that lasts) which can be fastened to a plant in a visible way. A few more outing with some of the learners may still be in order before a final route is settled and the stations are properly marked on the map.



Ndileka and the learners investigate a bush.

Finalising the Nature Trail

Then a pamphlet or booklet can be designed and made and the class, or group is ready to invite other classes or teachers to experience the Nature Trail that they have designed. It might be interesting to even invite some learners from a neighbouring school. Another task for some volunteers would be to design a questionnaire to evaluate or appraise the quality of their trail.

Repeating the Trail

It would really be worthwhile to repeat the trail with learners at different times of the year so that they could compare seasonal changes. Then they could include that information in an improved version of the Nature Trail Pamphlet.

When the activity is finished write your own personal report. Make sure that you collect evidence of learners' work and store it in your portfolio ready for the end of the year. A project like this might be an ideal thing to enter in an environment awards competition. Think about it.

Conclusion

You have come to the end of the sixth Natural Science umthamo. In the introduction we point out that the most important outcome of the activities in this umthamo relates to a change of **values**. This is the hardest type of educational outcome to measure.

Some outcomes relate to **knowledge (K)**. Other outcomes relate to the development of **skills (S)**. But in this umthamo we hoped to change values and this relates to **attitudes (A)**. People talk about the **KSA** of education. It is important to realise that **attitudes** and values are more abstract than **knowledge** (which you can test for), and **skills** (which reveal themselves in observable action). You have to **infer** attitude change indirectly, so it is harder to evaluate and assess. How do you find **evidence** of a change of **attitude**?

Go back to page 13 and re-read the last paragraph on the page. Now think carefully of your experience since starting this umthamo. Are you different in any way? Has the umthamo changed your thinking in any way? Have your feelings towards plants changed in any way? How do you give evidence of these kinds of changes?

Can you think of anything your learners have said or done in the past few weeks that is evidence of a change in attitude?

Perhaps you notice that they talk more about plants. Perhaps learners are starting to bring interesting plants to school to ask questions about, or to show to others. Perhaps you notice that plants are being mentioned during prayers. Maybe you even notice learners spending time at break looking at the new plants in the indigenous garden. Perhaps a learner comes in excited to tell you and the class that they have noticed that the 'isikholokotha' in the school garden has got a head of whitish-green flowers that smell sweet. What do you infer if a child writes in her journal that she hopes one day to study to be a person who cares for the environment. These are all small things, but they are signs or evidence that **attitudes** have changed.

Finally we suggest that you use the diagram below as a checklist to see if you and your learners have met the purposes that this umthamo set out to achieve. What do you think?

UNIVERSITY OF FORT HARE
DISTANCE EDUCATION PROJECT

CORE LEARNING AREAS COURSE
Natural Science

6th Umthamo
Gardening and Guarding Our Heritage Plants
First Pilot Edition - 2001

Conceptualised, developed and written by Alan and Viv Kenyon,

Co-ordinated, illustrated and edited by
Alan Kenyon

Acknowledgements

We would like to thank Ruth Stone and Jeanette Loedolff for spending time with us when this umthamo was first being conceptualised. Mthunzi Nxawe's support has been a strength. Nearer to completion, we are indebted to Sizwe Mabizela of the Department of Environmental Affairs and Tourism for his advice and enthusiastic support, and for making members of his staff available to help at short notice.

Once again Nomzi Mfabana, the principal of Ngwevana Farm School and her staff and pupils were really co-operative and of invaluable help, as were the grade six and seven learners and their teacher and principal Babini Maqolo of Mfunalwazi Primary School. Auriol Batten, well known local botanical illustrator, also gave wise advice and support.

We are also grateful to the WK Kellogg Foundation for generously sponsoring the development of this material, and Thokozile Chitepo-Mawere, who has taken a keen interest in our work.

Without the patience, expertise and help of Ron Kahn and Ricardo Stevens of L Harry and Sons, we could not have completed this book. Thank you.