

# SCIENCE SPAZA

[www.science-spaza.org](http://www.sciencespaza.org)



## INZULULWAZI NGEENTSALELA: INTSOMI NGODAKA



### AMABALI NGEENTSALELA

IMPAHLA ECOLEKILEVO EFANA NESANTI KUNYE NOMUNGU IQLLATHE IMIQONDISO ESUKA KOKUSINGQONGILEYO MALUNGA NEMVELAPHI YAKO. NJENGOKUBA IQOKELELANA EMHLABENI, YENZA OKANE ISHIYA INTSALELA. IZAZINZULU ZOMHLABA ZIGRUMBA KWIINDAWO EZINODAKA UKUQOKELELA ISAMPULI YEENTSALALA.

ELEBHU SIFUNDA UMAMEKO NGAMYE WEENTSALALA OKU KWENCWADI, UKUSIKELA KOLONA DAKA LUDALA EMAZANTSU UKUYA KOLONA DAKA LUTSHA NGAPHEZULU, OKWE KWEBALI, UKUSIKELA EKUQALENI UKUYA EKUGQIBELINI. OKU SIKWENZELA UKUFUNDA MALUNGA NENKANGELEKO YOKUSINGQONGILEYO KWIXESHA ELIDLULILEVO.



Photo:  
Dr. Jemma Finch



Knowledge is Ncah!



# ZIHLUKUHLE NGEENTSALELA!



VENZA UVAVANZO  
UKUBONA UKUBA  
YINTONI EKWINTSALELA  
ESIKOLWENI SAKHO  
OKANYE KOWENU.



## UZAKUDINGA OKU:

- IGLASI OKANYE IIJAGI ZEPLASTIKI EZIKHANYAYO, EZINEZIVALO
- UDAKA OKANYE UMHLABA OSUKA KWINDAWO EZIMBALWA EZAHLUKENEYO
- AMANZI
- INCWADANA, IRULA KUNYE NE INKI YOKUBHALA

**1** GALELA UDAKA OKANYE UMHLABA KWI JAGI.



**2** GALELA AMANZI.  
GCWALISA ZONKE IIJAGI NGOKULINGANAYO.



**3** VALA IZICIKO ZE UHLUKUHLE. ZINOMBOLE IIJAGI UZIBEKE ZIHLELE IXESHA ELINGAKA NGEELYURE EZINGAMASHUMI AMABINI ANESINE (24).



**4** NGOSUKU OLULANDELAYO:  
JONGA UMALEKO  
ODALEKILEYO KWI JAGI  
NGANYE. QHATHANISA  
OKUFUMENEYO OKANYE  
IISAMPULI NGOKWAHLUKANA  
KWEZI JAGI. INGABA  
UYAWUBONA UMAHLUKO?  
INGABA UKUJIYA KOKO  
UKUFUMENEYO OKAYE  
IISAMPULI KOOMALEKO  
EYAHLUKENEYO KWIJAGI  
KOHLUKILE?



## INGABA KWENZEKANI APHA?

Emveni kweeyure ezingamashumi amabini anesine, iisampuli zizakujikə zikunike umgangatho wodongwe, orowhexe kunge nowesanti. Ikujiya komgengatho ngamnye kwii sampuli zakho kuzə kufunekə imfaneekiso-ngqondweni okanye intluva yokuba loluphi uhlobo lweentsalela onalo.

Izatinzulu okanye iinzululwazi zomhlaba zisebenzisa iindlela ezahlukeneyo, ngokufana novavanyo olu ugqiba kulenza, ukufunda malunga neentsalela kunge nenkangeleko yendawo engqongileyo, kwixeshə elandulelayo okanye elidululeyo.

Ingabe ubungakanani bamagaqə weentsalela kusixeleta ntoni? Amagaqə amakhulu afana nesanti okanye igilabile anobunzima kwaye shlambekileyo ngamanzi, axeleta izatinzulu okaneue iinzululwazi malunga nobunjani bemvula eyayisina ngeeloxeshə.



**ISANTI**  
0-10% UDONGWE  
0-10% INTLENGA  
80-100% ISANTI

**UDAKA**  
10-30% UDONGWE  
30-50% INTLENGA  
25-50% ISANTI

**UDONGWE**  
50-100% UDONGWE  
0-45% INTLENGA  
0-45% ISANTI

### KEY

- = UDONGWE
- = INTLENGA
- = ISANTI



This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.  
To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.



# UKULUNGISELELA IKAMVA NGOKUJONGA IXESHA ELIDLULILEYO

Izazinzu okanye iinzululwazi eziphanda ngexesha elidlulileyo ziyakwazi ukwakhä imifanekiso ebonakalisa ukuba indawo yayikhangeleka njani kwixeshä elidlulileyo, ukwenzela ukubona ukuba itshintshe njani ngokuya kuhambä ixesha.

Oku kubalulekile ukusincedisa silungiselele utshintsho kujikajiko lwemozulu kunye nemicelimngeni esijongene nayo ngelithuba.



Photo: Torsten Haberzettl



Photo: Magnus Schult

## IMISEBENZI



### UDarryl Dreyer

ngumhlohlili wezendalo e West Coast Fossil Park. UDarryl unceda iindwendwe eziza kule paki ukuba ziqonde ukuba ziintoni iifosili, zenzeka njani, kwaye singafunda ntoni na kuzo. "Xa siqonda ukuba sinxulumene njani nokusingqongileyo isinika ukukhathala okanye inkathalo komnye-nomye kunye nendalo".



## AMAKHONKCO E KHARITYHULAM

- Inzululwazi ngobomi amabanga 10-12 Iyantlukwano, utshintsho nenqubela: Imbalu ngobomi emhlabeni; Izifundo zokusinqongileyo: IBiosphere kunye ne nkubo yempilo
- Inzululwazi ngendalo amabanga 7-9 Inkubo yomhlaba: Umjikelo wametye; Umoya

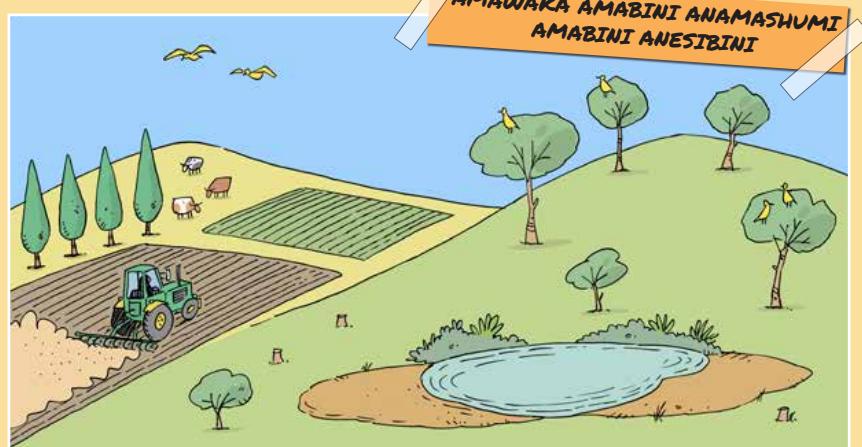
Knowledge is Ncah!



# CHONGA IYANTLUKWANO

INDAWO ZIYATSHINTSHA NGOKUYA KUHAMBA IXESHA. INGABA LINGAKWAZI UKUCHONGA IIYANTLUKWANO PHAKATHI KWALEMIFANEKISO MIBINI?

VICINGE LENTO:  
YIBANENGXOKO YEQUELA  
MALUNGA NOKO OCINGA  
UKUBA KWENZA UTSHINTSHO  
KUMFANEKISO.



## ZIQALELE EYAKHO IVENKILE YENZULULWAZI

Uyafuna ukuqala iqela lenzululwazi esikolweni sakho? Sithumelele ezinkukacha zilandelayo, ivenkile yenzululwazi izakuxhulumana nawe.

Isikolo: \_\_\_\_\_

Igama: \_\_\_\_\_

Inimbolo yomnxeba: \_\_\_\_\_

Idilesi ye emeyili: \_\_\_\_\_

Idilesi yokuhlala: \_\_\_\_\_

Ndwendwela u [www.sciencespaza.org](http://www.sciencespaza.org), Imeyili [info@sciencespaza.org](mailto:info@sciencespaza.org), Thumela umyalezo okanye u wathsaphu ku 076 173 7130 okanye usibhalele incwadi ku PO Box 22106, Mayor's Walk, 3208.

## ISILUMKISO SOKHUPHISWANO

SITHUMELELE IZITHOMBE ZEENTSALELA ZOVAVANZO KUNVE NEENGINGA ZAKHO NGOTSHINTSHO KOKUKLUNGQONGILEYO NGOKUYA KUHAMBA IXESHA, THUMELA IIIMPENDULO ZAKHO KWIKHASI LONXIBELELWANO U WHATSAPP KU 076 173 7130 UZIBONE USETHLUBENI LOKUPHUMELELA AMABHASO KANOKUTSHO.\*



\*Amangenelo amahluu ankgenqeza phambili ayakukhethwa nje ngaphumelelo ze anikwe ibhaso.

DAAD

Deutscher Akademischer Austauschdienst  
German Academic Exchange Service



Jive Media Africa

Eliphepha lomsebenzi limele imizamo yembumba eqokelelwe ze yadityaniswa ngabathathi-nxaxheba be Train-German connect 2021 summerschool. Train-ME2 connect linyathelo loqegeqsho oluphuma ku German-South Africa Project "Umkhondo weempembelelo zoluntu kunte notshintsho kwimozulu e Mzantsi Afrika" (TRACES), kunte ne namazwengamazwe ngaphakathi koqegešo nentsebenziswano kunte nabaphandi abaxhaswe phantsi kwe "ntsebenziswano yenzululwazi eyenzelwe ukuziqhelanisa neenqubo ezinobuzaza zomhlaba" (SPACES II) Inkqubo ye German Federal Ministry of Education.



NELSON MANDELA  
UNIVERSITY

UNIVERSITÄT GREIFSWALD  
Wissen lockt. Seit 1456



UNIVERSITY OF CAPE TOWN  
IYUNIVERSITY YASEKAPA - UNIVERSITEIT VAN KAAPSTAD

Science Spaza is an initiative of research communication specialists Jive Media Africa in partnership with the Yazi Centre for Science and Society in Africa, a registered Non-Profit Company and Public Benefit Organisation. This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

