

## Research Briefs

### EDUCATION

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#### Multilinguality in the classroom

English is the language of learning for most South African learners, and, according to Lyn Webb, there is a strong trend to increase the dominance of English at the cost of other languages. She investigated teachers' (whose first language is not English) ambiguity about language in education. While the teachers approached appreciated the value of English, they were conscious of the effects of the absence of their and their learners' first language in the classroom. Because these possible effects are not yet well researched, Webb's article makes an important contribution to the discussion. When teachers were enabled to explore the emotional and cognitive value of their own languages by means of writing poetry, they expressed very clearly the ambiguity, sense of loss and appreciation for their own language. Webb emphasises the need to investigate the cognitive value of other languages in education.

Webb L. Multilingual teachers' voices: Perceptions about the impact of language. *Education as Change*. 2012;16(2):231–240. <http://dx.doi.org/10.1080/16823206.2012.745752>

#### What is really happening in South African classrooms?

While policy initiatives aim to improve education in South Africa, Ursula Hoadley asks 'What is actually happening in the classroom?' Although the South African classroom is a diverse place, Hoadley focuses on the kind of classroom which is the most problematic – those in which teachers are least able to cope with their duties. Her article consists of a very useful critical survey of the international and local research that has been done by pointing towards the strengths and weaknesses within both the empirical and theoretical research. Although the diagnostic findings extracted from this literature are not surprising – phenomena such as the dominance of oral discourse, chorusing, limited evaluative feedback, use of an additional language, low cognitive demand, absence of texts, prevalence of concrete over abstract knowledge, lack of focus on writing and reading, and slow pacing – her presentation of the findings provides an important reference for any future policy, teacher training and strategic interventions.

Hoadley U. What do we know about teaching and learning in South African primary schools? *Education as Change*. 2012;16(2):187–202. <http://dx.doi.org/10.1080/16823206.2012.745725>

### EVOLUTION

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#### A new 2-million-year-old fox from South Africa

Malapa in the Cradle of Humankind (Gauteng, South Africa) is best known for yielding remains of the new hominin species *Australopithecus sediba*. Now a second new species has been identified: a small fox. This species was first thought to be very similar to the modern Cape fox *Vulpes chama*. However, after comparing the fossils with a broad sample of modern and fossil foxes, Hartstone-Rose et al. concluded that the remains are distinct enough to belong to a new species. They named this new species *Vulpes skinneri* after the late Professor John Skinner, who was Director of the Mammal Research Institute, University of Pretoria, and a President of the Royal Society of South Africa. The history of foxes is not well known but they probably originated in North America. The oldest African fox, from Chad, is about 7 million years old; two other extinct foxes, *Vulpes pulcher* and *Vulpes pattisoni*, have been previously described from the Cradle.

Hartstone-Rose A, Kuhn BF, Nalla S, Werdelin L, Berger LR. A new species of fox from the *Australopithecus sediba* type locality, Malapa, South Africa. *Transactions of the Royal Society of South Africa*. 2013;68(1):1–9. <http://dx.doi.org/10.1080/0035919X.2012.748698>

### HERPETOLOGY

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#### African Journal of Herpetology celebrates John Poynton

The Editor of the *African Journal of Herpetology*, John Measey, reports that the extraordinary contributions of Professor John Charles Poynton are celebrated in a special issue (volume 62 issue 1). Poynton, who received the South African Order for Meritorious Service in 1992, retired from the University of Natal in 1992 and relocated to London, where he continued to work on a biogeographical quest using African amphibians as his model group. Now, at age 81, he has a grand total of 106 publications (42 of these since his retirement); the significance of some of these papers is summarised by Loader et al. in an introduction to this special issue. (For a summary of Poynton's pre-retirement contributions see: Douglas R. *Afr Herp News*. 1991;16:10–11).

Poynton's major contributions are both taxonomic and biogeographical. His taxonomic work has been previously celebrated with many African taxa – both genera and species – named after him. To honour this morphological and taxonomic work, Wilkinson et al. and Cruz et al. pay tribute to John with two contributions in this special issue. In addition to his taxonomic work, Poynton made significant contributions to the understanding of African biogeography, specifically relating to African amphibians, and to our understanding of biogeographical areas of climatic cohesion over traditional cartographic terminologies. It is again on this point that Poynton makes a contribution in this special issue by reviewing his ideas on the Afrotropical amphibian fauna. The special issue also carries two additional articles celebrating Poynton's biogeographical heritage (pages 40–62).

*African Journal of Herpetology*. 2013;62(1):1–62. <http://www.tandfonline.com/toc/ther20/current>

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## ICHTHYOLOGY

### Mormyrid electric discharges distinguish species and sex

Five species of mormyrid fishes from West, East and southern Africa were compared morphologically by Bernd Kramer, and their electric organ discharges were recorded in the field. The five species were morphologically well differentiated. Their electric organ discharges varied in average duration from 362  $\mu\text{s}$  in the monopolar pulses of *Mormyrus tenuirostris* from Kenya, to 6675  $\mu\text{s}$  in the biphasic waveform pulses of *M. lacerda*, the waveform also displayed by all other *Mormyrus* species. The electric organ discharges of *M. hasselquistii* were so strong that the fish was painful to handle. The pulse duration of the discharges of *M. rume* differed significantly between the sexes, being on average  $1334 \pm 106 \mu\text{s}$  in female individuals and  $2008 \pm 195 \mu\text{s}$  in male individuals.

Kramer B. A morphological study on species of African *Mormyrus* (Teleostei: Mormyridae) and their electric organ discharges. African Journal of Aquatic Science. 2013;38(1):1–19. <http://dx.doi.org/10.2989/16085914.2012.745806>

### Understanding more about the coelacanth – 75 years after its re-discovery

A major research collaboration involving an international team of researchers from 40 institutions from 12 countries, including South Africa, has decoded the genome of the African coelacanth: a creature whose evolutionary history is both enigmatic and illuminating.

A sea-cave dwelling, five-foot long fish with limb-like fins, the coelacanth was believed to be extinct until a living coelacanth was discovered off the African coast in 1938. Since then, questions about these ancient-looking have loomed large. Coelacanths today closely resemble the fossilised skeletons of their more than 300-million-year-old ancestors. Their genome confirms what many researchers had long suspected: coelacanth genes are evolving more slowly than those of other organisms. In a recent paper on the coelacanth genome, which appeared in *Nature* (volume 496, 18 April 2013), researchers hypothesised that this slow rate of change may be because coelacanths simply have not needed to change: they live primarily off the Eastern African coast (a second coelacanth species lives off the coast of Indonesia) at ocean depths where relatively little has changed over the millennia.

Because of their resemblance to fossils dating back millions of years, coelacanths today are often referred to as 'living fossils' – a term coined by Charles Darwin. But the coelacanth is not a relic of the past brought back to life: it is a species that has survived and reproduced, but changed very little in appearance over millions of years. Says Jessica Alföldi, co-first author: 'It's not a living fossil; it's a living organism. It doesn't live in a time bubble; it lives in our world, which is why it's so fascinating to find out that its genes are evolving more slowly than ours.'

In addition to sequencing the full genome – nearly 3 billion 'letters' of DNA – Alföldi and colleagues also looked at the RNA content from both the African and Indonesian species and from lungfish. This information allowed them to compare genes of lungfish with gene sets from the coelacanth and 20 other vertebrate species. Their results suggest that land animals (tetrapods) are more closely related to lungfish than to the coelacanth.

However, the coelacanth is still a critical organism to study in order to understand what is often called the water-to-land transition. Lungfish may be more closely related to land animals, but the lungfish genome is simply too unwieldy for scientists to sequence, assemble and analyse. The coelacanth's more modest-sized genome (comparable in length to our own) is yielding valuable clues about the genetic changes that may have allowed tetrapods to flourish on land.

Amemiya CT, Alföldi J, Lee AP, Fan S, Philippe H, MacCallum I, et al. The African coelacanth genome provides insights into tetrapod evolution. *Nature*. 2013;496:311–316. <http://dx.doi.org/10.1038/nature12027>



A coelacanth off Sodwana Bay in KwaZulu-Natal in May 2011 (filmed by the African Coelacanth Ecosystem Programme of the South African Institute for Aquatic Biodiversity).