New SA can make a rainbow planet

We need to grow the country's next generation of scientists and it will require a fresh approach, writes **Carl Palmer**

A FEW days ago, Nasa announced it they had discovered a new planet, about the same size as Earth, in another solar system. It is about the same distance as Earth from its sun, but it's an uninhabitable burning ember. This is the most recent in a long list of new planet discoveries, all of which appear to have pretty hellish conditions.

Why are these discoveries so important? One reason is that it emphasises how special the planet Earth is; the only known habitable planet.

Back on Earth, researchers and teachers from the Applied Centre for Earth System Science (Access) are organising a student workshop on the topic of climate change to be hosted at UCT.

This in itself may not be very newsworthy, but this particular workshop, titled *The Habitable Planet*, aims to do more than just teach people about climate change. This new course aims to attract more students to science, particularly those of a disadvantaged background.

We believe our original approach to this topic so important, not only to the students taking it, but to every South African.

There is one thing everyone involved in South African science seems to agree on: South Africa is desperately short of scientists and technically trained people. We aim to be world leaders in research but, while the government has put its money where its mouth is, the young scientists we need to make it a reality are still too thin on the ground.

The problem to my mind is clear; most South Africans are never inspired by science because they are never given the chance to be.

As about 80 percent of South Africans live in the townships, it is highly probable that that's where most of the next generation of great thinkers are growing up. Here, the teaching of science tends to be very poor, not due to lack of effort, but due to a lack of opportunities, a lack of resources and a lack of training for teachers themselves. The recently released matric results bear witness to this.

The obvious conclusion is that, unless something changes, four out of every five of our best potential scientists are likely to never be inspired by science, never consider a career in science, and therefore will never reach their potential.

CRADLE OF MANKIND: The skull of a Melapa Hominid 1, a male aged between 10 and 13, from the *Australopithecus sediba* species found in the Cradle of Life. South Africa offers its future scientists one of the best natural laboratories. PICTURE: MATTHEW JORDAAN

Running on 20 percent of our human capacity is no way to become dominant in the world.

To make matters worse, science is seen by the general public as being an exclusive, even elitist, activity, accessible only to white people, and having relevance only to an esoteric minority. It should not be this way; science should be something everyone enjoys and benefits from. But the question is, how do we change that?

Luckily for us, South Africa is blessed with two amazing advantages that could see this situation turned around. The first is that this kind of problem has already been solved before in South Africa. Before 1994, the majority of South Africans had no interest at all in rugby as, for similar reasons as for science now, they didn't think it was relevant to them. But Nelson Mandela had the foresight to see that rugby could be transformed into a symbol of South African excellence that could be used to unite a then divided country.

Nearly everyone knows this *Invictus* story well, so I won't labour the point here – and if you haven't, I would really encourage you to watch the recent film – but how can we do the same for science?

We need to identify something about South Africa that is as world-beating as the 1995 Rugby World Cup team was. We would then be able to use this as a symbol to help democratise science, making it something for every South African.

And while it seems almost flippant to imagine there is anything as iconic and world-conquering as the 1995 Rugby World Cup team, this leads me to South Africa's second great advantage: it has one of the world's most magnificent and unusual natural environments – a natural laboratory if you will – like nowhere else on Earth.

What other country can offer visitors a beach with a warm and a cold ocean within an hour's drive of each other? Where else in the world can you easily move between shopping in a cosmopolitan city, spotting the big five and sipping sundowners beside majestic mountains rising out of the sea, all in one day? What other country has its own floral kingdom with biological riches to rival the Amazon?

Thinking about this, you unavoidably come to the realisation that the Rainbow Nation extends beyond the people of South Africa and encompasses the whole of our physical and biological environments; South Africa's world-beating excellence lies in its diversity.

The course I am convening uses this realisation as its premise, and therefore departs from the European model for motivating students to environmental sciences, one which focuses on alarming students about impending doom and evoking a sense of guilt for the damage our lifestyles have done to the world's environments.

This "Western" approach has been proved to motivate students in developed countries, and might well speak to richer South Africans, but why should poorer South Africans care? They have always suffered and, in many cases, they have enough problems today without needing to worry about what might happen 50 years in the future. Can we blame disadvantaged young South Africans for wanting to believe that the future will be better?

In The Habitable Planet we rather celebrate the realisation that we live on a special planet, in an exceptional place and at an important time. We first discover why the planet is habitable, which requires us to understand a few scientific principles. These can beautifully be illustrated in the amazing natural laboratory that South Africa's physical environment provides.

We then move on to realise that humans are now an important part of the environment and of the climate story; the sudden rise of human beings as a geological agent also needs to be considered as an integral part of our story. Amazingly we find that yet again South Africa is the best place to do this; we live in the cradle of mankind.

We therefore come to the idea of a Rainbow Nation that is made up of not just the people but of all the biological and physical aspects of South Africa.

A smaller version of the workshop has been run for the past four years and the students are almost unanimously positive afterwards; each year, about 80 percent of them maintain that the workshop changed their career plans. Many of them feel so inspired that they want to write about their experience or speak about what they have learned to a variety of audiences.

It is because of stories like these that we have faith that this approach works in a southern African context; we truly believe that this scientific rainbow nation is a symbol of excellence that can inspire young South Africans to have a sense of pride in their country, thereby making science accessible, universal and interesting to all.

If we can help people to realise what an amazing country we live in and how important that is in the story of why the Earth is habitable, we will do for science what Mandela did for rugby.

● *Dr Carl Palmer of the Department of Oceanography at the University of Cape Town is part of the team behind "The Habitable Planet" workshop. For more details, contact Dr Palmer at carl.j.palmer@gmail.com, or join the facebook group at http://www.facebook.com/#!/group.php?gid=4352117413*