



GRADE 12 PHYSICAL SCIENCE PRACTICALS IN THE WESTERN CAPE

By Gabby Gelderblom

The Cape Town Science Centre staff has been out and about presenting Grade 12 Physical Sciences Practical Work Programme in the Western Cape with the WCED Mobile Science Centre.

During March the team visited 11 schools and reached 604 learners. Some of the schools the educators are very appreciative as they often do not have the enough time or equipment to present these workshops themselves. Schools that were visited include: Rocklands High School, Thandokulu High School, Garlendale High School, Rhodes High School and many others.

The workshops are presented in school halls on Tuesday and Thursday afternoons. The aim of these workshops is to support Grade 12 learners in preparation for their final exams. These workshops will enable the Grade 12's to do the two practicals they are required to do this year, and to show the educators how to do these practicals. The practicals focus on the following topics, determining the effect of temperature on the rate of chemical reactions, and the value of gravitational acceleration.

The practicals will continue in May and June 2011, where a further 13 schools will be reached. The experiments that the learners will be doing are as per NCS requirements for Physical Sciences, Grade 12, these will be performed at schools that have requested such an intervention.

The feedback has been great and the workshops have been well received. Some comments from the schools.

"Quality of the presentation was extremely good and the learners found the experiments very exciting! Availability for grade 11 & 10 practicals will be welcomed, Thank you!" Samantha Heneke, Livingstone High School.

"This kind of road show should reach all schools" D de Storie, Harold Cressy High School



"I also had the privilege to ride the Tuk-Tuk (Indian taxi)" - says Phumezo

Phumezo Kwinana and Prof. Mdebuka in India.

FOSST Discovery Centre went on a trip to India

for the 2011 HP Catalyst Worldwide Summit which was held in New Delhi, India from 9 - 13 March 2011. The Summit was held at the Lalit hotel and delegates from all over the world attended. The FOSST Discovery Centre, through referral by the DST (Ms Tebogo Gule), received a donation from Hewlett Packard (HP) worth \$150 000.00 for the 2010 HP Catalyst worldwide Project. The sponsorship mainly consists of 38 Tablet PCs (laptops), Multi-seat system, printers and photocopiers etc.. In 2009, the FOSST Discovery Centre received the 2009 HP Innovation in Education Grant Initiative worth \$100 000.00. This one also consisted of useful equipment like Tablet PCs, printers and photocopiers and wireless access points etc. Both included funded trips to attend annual HP Worldwide Summit and a cash award for travel incidentals and buying accessories for the equipment. These are fruits of endeavours of our fundraising campaigns that we do every year.

Prof. Mdebuka and I attended the summit and we gained lots of useful skills to implement in the centre. What we found out there is that they make effective use of the mobile labs to capacitate both learners and educators. The Agastys International Foundation in India (which heads the "New Learner" Consortium we are operating under in this project) is doing a great work in STEM careers and there are many lessons we can learn from them. The HP equipment (with the aid of our mobile lab) will enable us to pursue our objective of changing the education equation, i.e. to "re-image teaching using technology". This project will be successful if the industry and companies with similar objectives can assist in the project. Our Centre is doing a lot of development in the rural schools and other under-represented communities. I want to sincerely thank DST for the support they give our Science Centres. We would not have achieved this without their support.

By Phumezo Kwinana



We also had fun in India, we watched the cricket matches (Sshhh... honestly, in our rooms!) but it was nice to be in the environment where everybody was talking about the cricket (fortunately, the time we were there it was India vs South Africa).

Outreach programmes to rural-based schools using mobile lab.

In March, FOSST visited Tyali High School in the Alice region. The school was very appreciative of this assistance. The Mobile Lab is a blessing to our Centre and it helps us to connect with our feeder schools. We also, from time to time assist two DST adopted schools closer to our centre, viz: Bisho High School and Hector Peterson High School. The National Youth Service (NYS) and the Japanese Overseas Corporation Volunteers (JOCV) are very helpful in these outreach programmes. The NYS and JOCV are both the human resource assistance support by the DST. We have no doubt that our interventions will make STEM education **fun, useful and accessible** (slogan by the Agastya International Foundation)!

By Phumezo Kwinana

Exploring the fascinating complexities of fish behaviour...

By: Siphokazi Nonyukela

The aquatic world is full of wonder and mystery, making for adventurous and enlightening science projects. It is therefore not surprising for a non-specialist to discover that fish behaviour is a growing area of scientific research. So, what is fish behaviour? What influences fish behaviour? How can fish behaviour be monitored? Why is it important to monitor fish behaviour? Aquatic biologists who are passionate about fish science seek to find answers for these questions. For them, the better they understand fish behaviour, the more successful they are in interpreting biological and ecological data, and the better they are at giving aquatic management advice.

Driven by his passion for estuarine ecology, Dr Alistair Becker, a Postdoctoral Researcher at the South African Institute for Aquatic Biodiversity (SAIAB), is currently conducting a study in the permanently open Bushmans Estuary. This study investigates two aspects relating to fish ecology, namely the possible movement of fishes up and down the estuary in relation to the tidal cycle and fish behavioural responses to artificial lights at night.

With the collaboration of three scientists from SAIAB and two from the Norwegian Institute for Nature Research (NINA), this study uses a technological device called the 'Dual-Frequency Identification Sonar' (DIDSON) which is placed next to the channel in the lower reaches of the Bushmans Estuary. The DIDSON is an acoustic camera that can be used during the day and night, in turbid or clear water, to observe fish behaviour, size, composition and location in real time, with minimal disturbance of the fishes.

This study investigates the response of fish in the Bushmans Estuary to incoming and outgoing tides, as well as whether they are attracted to or repelled by artificial light at night. The first hypothesis proposes (i.e. before the analysis of data collected by the DIDSON) that fish move down to the estuary towards the sea on the ebb (outgoing) tide and up the estuary on the flood (incoming) tide. The second hypothesis proposes that large predatory fish are attracted to artificial light illuminating the surface waters of the estuary due to small prey fish also being attracted to the light. "Without this technology, it would be virtually impossible to conduct this type of research," said SAIAB's Chief Scientist and Becker's supervisor, Professor Alan Whitfield. The DIDSON allows behavioural observations under natural conditions that are not possible with other fish sampling methods.



62nd International Astronautical Congress

For the first time in Africa, the International Astronautical Congress (IAC2011) will be hosted by the NRF in Cape Town from the 3-7 October 2011. The congress is an annual meeting of the International Astronautical Federation (IAF) which is an international body made up of space agencies, space companies, societies, associations and institutions. The recently launched South African National Space Agency will be taking centre stage at many of the discussions around Space in Africa and the Congress will be affording many South Africans the opportunity to engage directly with space science and technology developments from across the globe and to meet cosmonauts and astronauts. Many public, learner and educator engagement programmes are being planned for the congress. For more information, visit the conference Website at <http://iac2011.com/>

Biggest Science Class in the World?

By Derek Fish



Unizul Science Centre has tackled the challenge of science education head-on:- presenting a mechanics workshop to an incredible ten thousand matric science students in February!

The pupils were drawn from over 300 high schools and attended at central venues in Empangeni, Nongoma, Pongola, Nqutu, Piet Retief and Vryheid. The workshop presented practical work to the students, which is seldom seen in under-resourced schools.

We are turning out thousands of science students who are only capable of "second-hand science", says Director Derek Fish, who presented to all 10 000 students. research.

"Hundreds of eager students crowd the hall at Mlokothwa High School, Nongoma, to attend the Matric Mechanics Workshop."

Everything they learn is from books, and was discovered by someone else: Newton's Laws, Boyle's Law, Coulomb's Law etc. While this knowledge is an essential base, it is not enough. We desperately need scientists who can generate *new* knowledge:- the solution to global warming, the cure for HIV/Aids, an alternative to petrol:- these answers are not going to be found in books. We need students who can experiment and ultimately generate new knowledge through research.

It is a sobering thought that the money spent on Moses Mabida stadium in Durban would have provided a state-of-the-art science lab for every secondary school in KwaZulu-Natal! Countries overseas with robust economies are all those who have invested heavily in school science-education:- especially hands-on practical work which creates tomorrow's researchers. South Africa will once again participate in the "Trends in International Maths and Science Study" (timms.bc.edu) in 2011, which benchmarks our science and maths students against those in 65 other countries. Having come last every time we participated since 1995, it will be interesting to see how we fare:- watch this space . . .



Scifest Africa

4-10 May 2011

Grahamstown

Download the programme here

<http://www.scifest.org.za>

The 13th SAASTEC Conference Proceedings have been posted on the website but there are still a lot of outstanding papers. You know who you are! Send them in please.



6th SCIENCE CENTRE
WORLD CONGRESS

CAPE TOWN, SOUTH AFRICA 2011

Science Across Cultures

4-8 September 2011

For more info:

<http://www.6scwc.org>

6SCWC SESSIONS

The 6SCWC issued a Call for Session proposals which closed in early November. We were overwhelmed to receive more than 100 session proposals for panel discussions, workshops and forum debates from delegates in more than 40 countries.

The 6SCWC International Programme Committee (IPC) met for four days in Cape Town in late November 2010 to carefully review the session proposals and to construct a congress that would meet everyone's needs. 54 sessions, involving more than 216 delegates as convenors and speakers, have been accepted onto the sessions programme. There are also exciting, interactive demonstrations planned during lunches and teas, and Science Café sessions in the mornings.

Go to <http://www.6scwc.org/schedule.php> for the schedule at a glance.

Remember to register soon

PLEASE NOTE:

Organisations that were successful in their application for programmatic support to attend the 6SCWC will have received their 6SCWC registration form through direct email correspondence with SAASTA. Should your organisation have been successful in securing programmatic support, please identify your two attending delegates, complete and return the manual 6SCWC registration form to SAASTA. Delegates who have been granted support to attend the congress by their organisations are pleased asked **not to register via the congress website**.

Congress Registration Fees

Registration – Early (until 3 June 2011) ZAR 5,525.00

Registration – Standard (until 19 August 2011) ZAR 6,525.00

Registration – Late ZAR 7,525.00

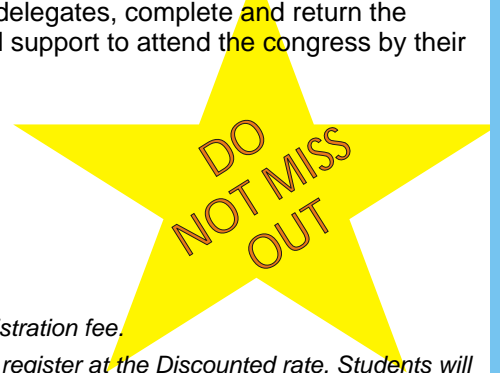
* **Registration - Discounted (until 3 June 2011) ZAR 4,250.00

* *Residents of low-GNI (gross national income) countries are eligible for a discounted registration fee.*

** *Delegates who will be registered students for the duration of the 6SCWC are eligible to register at the Discounted rate. Students will be asked to email the 6SCWC Secretariat proof of their student registration at academic institutions.*

Pre-Congress Workshop Registration Fees

Registration ZAR 1,200.00 Includes workshop materials, light refreshments on pre-congress workshop days and the Pre-Congress Workshop Dinner (2 Sept). **Please Note:** *The Pre-Congress Workshop Registration Fee has been increased since prior advertising due to an increase in the parameters of the event.*



Owen Gaffney (Director of communications, International Geosphere-Biosphere Programme (IGBP), Secretariat Royal Swedish Academy of Sciences) is writing to the networks of science museums and centres to see if they can coordinate an inspirational and visionary series of global events focussing on science, the Earth system and global sustainability in the run up to the UN's Rio+20 Earth Summit in June 2012.

In March 2012, (26-29), the international global change programmes and their sponsor, the International Council for Science, will hold a MAJOR international science conference in London, **Planet Under Pressure: new knowledge towards solutions**. The conference will give a State of the Planet Assessment and help develop a vision for the future. We are working closely with Ban Ki Moon's High-level panel on Global Sustainability. The weekend before the conference is the 2012 Earth Hour.

He thinks there are a number of exciting opportunities to communicate the scale of change in the last 50 years, the impact this has had on a planetary scale, the real risks of crossing planetary boundaries, the urgent need to move on to a sustainable pathway, and the hope for a bright future for all. Live links to the conference or using videoconference facilities might be a possibility to bring some of the speakers to our network of venues.

The conference will launch a new contract between science and society as well as launch a new Apollo-scale international research programme on global sustainability.

For more information see:

<http://news.bbc.co.uk/2/hi/8854653.stm>

<http://education.theage.com.au/cmsspage.php?intid=142&intversion=68>

<http://www.nature.com/news/2010/101201/full/468601a.html>

Conference website: <http://www.planetunderpressure2012.net/>

Join IGBP mailing list <http://www.igbp.net/page.php?id=329>

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