



SAASTA Science
Advancement Highlights
2009



Promoting the science of today for the world of tomorrow

Promoting the science of today, for the world of tomorrow

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CREDIT: The theme information and fact boxes scattered throughout this report are extracted from the series of "Did You Know/Shift Happens" animated information clips, produced by Karl Fisch and Scott McLeod, and available at www.shifthappens.wikispaces.com



In a country where science, engineering and technology have the potential to leapfrog the many challenges we face, people need to know how science can improve their lives. The South African Agency of Science and Technology Advancement (SASTA) is committed to this goal.

As a business unit of the National Research Foundation, our mandate is to advance public awareness, appreciation and engagement of science, engineering and technology in South Africa. Through our many outreach and awareness programmes, some of which are highlighted in this report, we aim to entice students to pursue careers in science, and to instil in media and the general public an enthusiasm and appreciation for science and its application in our everyday lives.

DID YOU KNOW ...?

The top 10 jobs that will be in demand in 2010 did not exist in 2004.

We are currently preparing students for jobs that don't yet exist, using technologies that haven't yet been invented ... in order to solve problems we don't even know are problems yet.

Promoting the science of today, for the world of tomorrow



Prepare for the future

Foreword

SAASTA has now been part of the National Research Foundation (NRF) family for more than seven years. In this short period, the organisation has grown dramatically and, within the context of the NRF Vision 2015, it continues to explore its niche as the driver of science advancement and engagement within South Africa's science community.

Science advancement, which includes outreach, communication and public engagement, has developed remarkably within the broader South African system over this period and we will all continue to explore an overall strategy in support of a more coordinated sector. However, this does not mean that we are resting on our laurels. We realise that much needs to be done to make science more accessible to the South African public and our youth in particular. South Africa ranks at the bottom of the latest Trends in International Mathematics and Science Study, and – coupled with poor mathematics and science matric results – there is no doubt that hard work lies ahead of us.

It has been shown that when scientific research findings are made accessible to the broader community, innovations and entrepreneurial opportunities often follow. Research findings can also have an impact on policy and social conditions in the country. But these findings have to be communicated and “translated” so that science can become part of everyday conversation. This remains one of our biggest challenges.

The NRF, and SAASTA as one of its business divisions, are committed to growing a strong and representative science and technology workforce. While we pride ourselves on the fact that we have a wide range of activities to introduce and excite young learners about science and



“We firmly believe that together we can make South Africans enthusiastic about the wonders of science, engineering and technology and help build a scientific workforce that will drive our country's development.”

Beverley Damonse, Executive Director of SAASTA

technology, we are very aware that we cannot do this without properly trained people. Many of our projects therefore focus on building the capacity of science outreach in South Africa. These include, for example, the cooperative programme with the American Museum of Natural History; the Science Centre Capacity Building programme that we run on behalf of the Department of Science and Technology (DST); and the various competitions through which we encourage young scientists to communicate their work to larger audiences.

The highlights of the past year include the launch of two new programmes that we manage on behalf of the DST: the Public Engagement with Nanotechnology programme and, more recently, the Hydrogen South Africa Public Awareness programme. We will use the experience we have gained from managing the Public Understanding of Biotechnology programme for the past seven years, to guide us in this task.

I would like to acknowledge the NRF management team, and especially the NRF Executive, for their support and commitment to developing science advancement in South Africa. I am also very grateful to our partners from private enterprise, national facilities, science centres, higher education and government departments who have faith in us and who have supported and contributed to many of our projects in the past year.

I would like to thank the DST for their ongoing support, sponsorship and the large number of projects and initiatives that they entrust to SAASTA.

Finally, I would like to thank the enthusiastic SAASTA staff who often work under trying circumstances, but always with the passion and commitment to “make it happen”.

SCIENCE IN NUMBERS

Growing a representative science and technology workforce in South Africa:

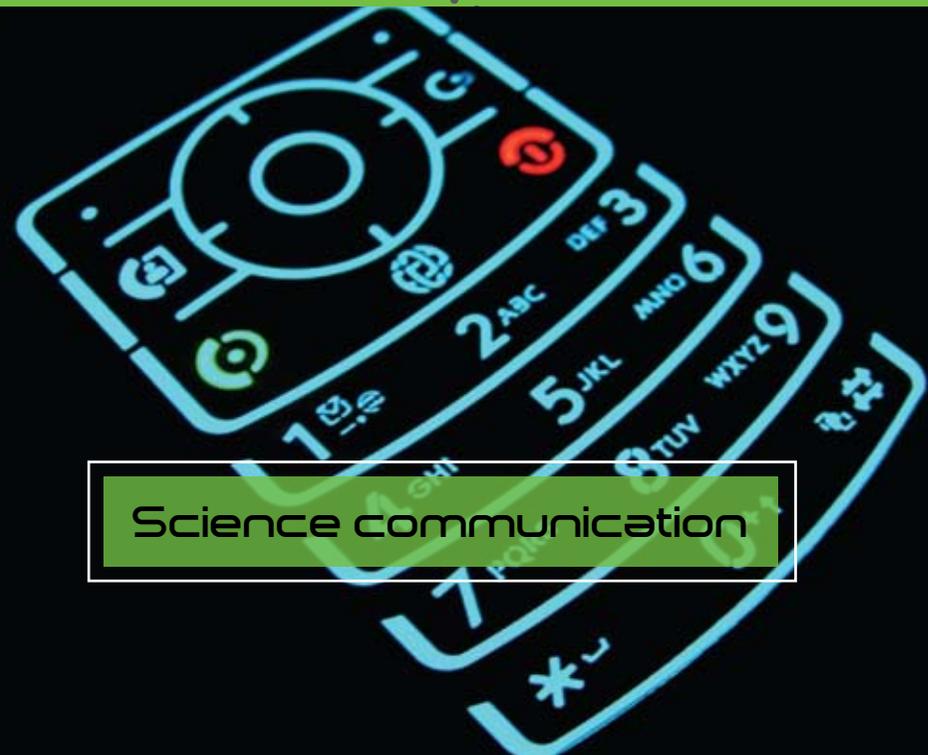
- 140 807 participants were involved in science festivals under the SAASTA umbrella, in the past year.
- 118 delegates from 16 countries attended the 2nd African Science Communication Conference organised by SAASTA.
- 226 198 learners and 12 345 educators were reached through the activities of SAASTA.

140 807 118 226 198

DID YOU KNOW ...?

"The computer in your cell phone today is a million times cheaper and a thousand times more powerful, and about a hundred thousand times smaller (than the one computer at MIT in 1965). What used to fit in a building now fits in your pocket; what fits in your pocket now will fit inside a blood cell in 25 years." *Ray Kurzweil*

Promoting the science of today, for the world of tomorrow



Science communication

A new recipe for quality science reporting



How can the frequency and accuracy of media reporting on complex scientific issues be improved? The Public Understanding of Biotechnology (PUB) programme seems to have found the right recipe – not only for improving the quality of information but also the frequency of reporting on biotechnology issues.

Over the past two years, the PUB programme has shared a wealth of specialist insight through a series of media round table events, not only promoting science itself but also contributing to stronger scientist-journalist relationships.

These interactive briefings give the media viewpoints of a cross-section of specialists on a specific topic. In March 2008, this included a debate on the future of biofuels in South Africa. In June 2008 the focus was on the use of genetically modified organisms (GMOs) in the wine industry, and in October on biotechnology and medical research. Events in February and March 2009 focused on bioprospecting and DNA fingerprinting in forensics.

At each of these sessions, a panel of experts representing a variety of viewpoints shared their expertise and answered questions from the audience.

The response has been such that the programme has earmarked funds to extend these events to other stakeholders in the science and technology sector, sharing the messages with more community-based media and involving more science centres in presenting media round tables.

In February 2009, PUB invited science centres to participate in a round table event on bioprospecting, and conducted working group sessions to familiarise



participants with this method of sharing scientific information. The programme also invited participants to submit innovative and creative proposals for duplicating the media round table concept. Various science centres were then funded to host these events at their institutions.

Spreading the word

- Media training company **FrayIntermedia** coordinated

“Besides promoting better quality coverage of biotechnology in South Africa, we believe these events will have a positive impact on scientist-journalist relationships, creating a new layer of science-savvy journalists in rural and often disadvantaged areas.”

Birgit Schwartz, FrayIntermedia

a media round table event for journalism students, scientists and the regional community media in partnership with the Institute for Environmental Biotechnology and the Rhodes University School of Journalism and Media Studies. The title was “From Toxic Waters to Profitable Ponds; or Bugs into the Battle”, focusing on environmental bioprocesses for toxic wastewater treatment and the exploitation of solid waste for use in agriculture and industry.

- **The Olwazini Discovery Centre** hosted a round table event in Pietermaritzburg, focusing on using science to fight crime. Topics included how to preserve a crime scene, how DNA evidence can be used to prove innocence or guilt, and how forensic evidence is used in court. Experts include representatives from the SA Police Service, the Local Criminal Record Centre and a local prosecutor.
- **Sci-Enza** hosted a round table event on the role of biotechnology in food security at the University of Pretoria. Related events included a workshop for Sci-Enza staff to train them in producing communication material aimed at the general public, as well as a Science Café at the University of Pretoria to boost staff and student interest in the round table events. "We believe the event was highly successful in relaying accurate information about the topic to the public," says Rudi Horak, Sci-Enza manager. "The event also served to make us aware of the fears and distrust that some scientists have towards journalists."
- **The MTN ScienCentre** in Cape Town held a media round table on genetically modified (GM) potatoes that are resistant to one of the industry's biggest threats, the potato tuber moth. This coincided with an earlier GMO Executive Council decision to reject a permit for the general release of the potato variety. "I believe regular round table events will create an ongoing media 'following' of journalists who are interested in, and committed to reporting on science issues accurately," says Julie Cleverdon, Manager of the ScienCentre.
- **The Sci-Bono Discovery Centre's** media round table

“Hosting these events has provided a valuable platform for others to discuss specific topics with experts.”

event focused on "Bringing biopharming to life". Biopharming is the process in which pharmaceutical proteins and chemicals are produced by GM plants and animals. Diseases that can potentially benefit from these plant-produced medicines include Alzheimer's disease, cancer, HIV/AIDS, and many more.

- **The Old Mutual MTN ScienCentre** in Gateway, KwaZulu-Natal, hosted a media round table on stem cell research in South Africa. "We had a good topic, dynamic speakers, and good attendance," says the Centre's Shabnum Moosa.

For many science experts, their interaction with the media is limited and is often described as a negative experience. Each round table event was therefore preceded by training for the speaker, not only to explain the interaction that was expected from the media, but also to ensure that speaker presentations were appropriate to the audience.

A subsequent review of the events has revealed that there are still many lessons to be learnt. However, science centres interact with a broad spectrum of people and hosting these events has provided a valuable platform for others, such as government officials, academics and science centre staff, to discuss specific topics with experts who are passionate about their work



90

FAST FACTS

• Some 90 journalists were reached through media round table events in 2009.

• 27 scientists and one lawyer underwent science media training.

27

• 80 others attended the various media round table events.

80

Why science supports sustainability

Africa's sustainability problems can only be solved by science-based solutions, and effective communication plays a key role in this. However, science communication is only effective if there is enough science to communicate.

These were the words of Professor Mohamed Hassan of The Academy of Sciences for the Developing World (TWAS), speaking at a special lecture at the 2009 African Science Communication Conference.

Professor Hassan was the first keynote speaker at the conference, organised by SAASTA's Science Communication Unit. Some 116 science communicators from 16 countries gathered to share experiences and best practices in communicating the work of researchers to various audiences. The conference, which was opened by South Africa's Deputy Minister of Science and Technology, Mr Derek Hanekom, took place in Midrand from 18 to 20 February 2009.

"This conference will contribute much towards pointing out the importance of science communication in Africa and the role it has to play in improving investment in scientific research."

Lorenzo Raynard, Manager of SAASTA's science communication unit

According to Professor Anthony MBewu, second keynote speaker and then CEO of the Medical Research Council of South Africa, the science community is only now realising the importance of science communication in advancing society.

"Science communication is vital in producing a healthy nation," he said.

Professor Mbewu believes that science communication can have a positive effect in three areas: firstly, in communicating the importance of research to gatekeepers, policy makers and the media in terms of generating funds and shaping positive public opinion; secondly, in promoting public participation in research or clinical trials by creating enough awareness to develop informed consent; and thirdly, in translating scientific findings into everyday, comprehensible terms that will positively impact on people's quality of life.

The many other highlights of the conference included:

- A presentation by Professor Anusuya Chinsamy-Turan on the status of South African women in science and engineering, their challenges and the support networks they are creating.
- Robert Inglis and Dr Pradeep Srivastava's presentations on ways of communicating science innovatively through cartoons.
- Kevin Govender's workshop on ways in which astronomy can aid science and mathematics teaching.



Among the many highlights of the Second African Science Communication Conference was a presentation by Professor Anusuya Chinsamy-Turan, pictured above, on the status of South African women in science and engineering, their challenges and the support networks they are creating.

Presenters:
49 speakers
from
11 countries

(South Africa, Spain, India, Ghana,
Cameroon, Nigeria, Zambia, Lesotho,
Uganda, Zimbabwe, Australia)

Media:
9

**Scientific
institutions:**
23
institutions represented

Delegates:
118
16 countries represented

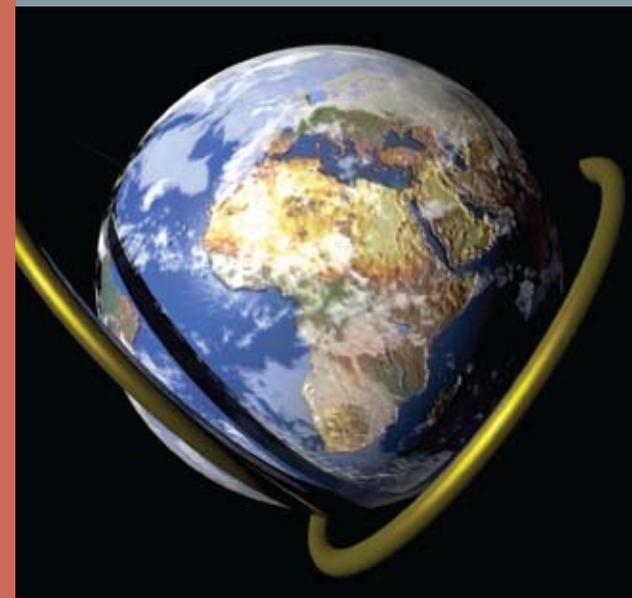
Second African Science Communication Conference DVD available

A DVD with all the conference presentations of the Second African Science Communication Conference is available free of charge from SAASTA. For copies contact Tryphina Mabena on email tryphina@saasta.ac.za; or tel: 012 392 9320.

Five ways of strengthening science communication in Africa:

- 1 Create at least one science centre in each African country to bring science closer to society.** Of the 2 400 science centres worldwide only 23 are in Africa, and 17 of these are in South Africa. By contrast every citizen in the United Kingdom lives within two hours' drive of a science centre.
- 2 Establish an African centre for science policy and science communication** to train a new generation of experts in policy formulation and communication; as well as to build the communication capacity of scientists.
- 3 Create a science communication unit in each African science academy** to support more effective communication strategies, engage the mass media and ensure that government policies on science-related issues are based on the best available scientific evidence.
- 4 Consider the formation of an African space agency** to coordinate space research efforts on the continent, with leadership from Algeria, Nigeria and South Africa.
- 5 Engage the general public in science in more innovative ways.** Learn from the Brazilians who include science when they enjoy music, art and even during carnival time!

From Professor Mohamed Hassan, of the Academy of Sciences for the Developing World (TWAS).



Getting into the minds of the South African public

The public understanding of, and engagement with, science has been quantitatively measured and monitored over time in a number of countries such as India and the US, as well as in Europe. South Africa, however, has never initiated a systematic, comprehensive and nuanced assessment of the relationship between science and the public. Until now.

In 2009 SAASTA commissioned the Human Sciences Research Council (HSRC) to provide the science community with a national picture of the public's level of understanding of science and technology.

In their scoping exercise, which was completed mid last year, the HSRC revealed that no current comprehensive, statistically representative and in-depth studies of the South African public(s) understanding of science exist.

Previous studies (most of which are outdated) cannot be adequately compared as the methodologies and/or sampling methods or groups are incompatible. Considering that science and technology are key factors in individual, social and economic development, the HSRC strongly recommended that an in-depth, national study be carried out.

Other recommendations included the following:

- A framework of the public's relationship with science and technology should be established. This framework should encompass the dimensions of the non-homogenous nature of the society, of the attitudes, values and knowledge of the public, and the dimension of communication and awareness programmes.
- The promotion of the public's relationship with science needs to be driven by government with the relevant partners. It would be appropriate for the DST to champion this agenda and provide resources in order to ensure that effective communication strategies are set in place.
- Given the importance of science communication in shaping the relationship between science and the public, there should be a review of theoretical tools for understanding the impact of science communication on attitudes towards science and technology.
- South Africa needs to plan to undertake dedicated studies on the public's relationship with science. These studies need to collect baseline information on a set of appropriate indicators, and need to be conducted on a periodic basis to assess the public's relationship with science. Research has to be undertaken to inform the science community of how to strengthen this relationship.

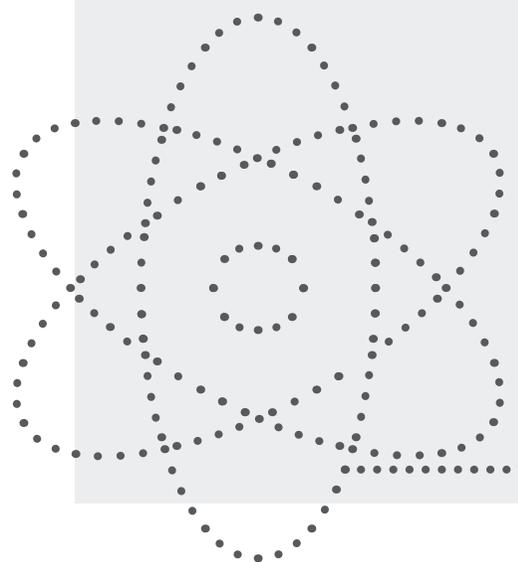
The HSRC report also identified some methodological pitfalls and weaknesses inherent in previous studies – both local and international – which could help SAASTA to avert similar mistakes in potential future studies.

SAASTA is currently investigating the possibility of designing and implementing studies that will look at the relationships between the different public groups and science in South Africa.

The South African population is not homogeneous and due to the fact that the public can be further sub-divided in a variety of public audiences, a carefully planned strategy needs to be developed to assess the relationship between the South African public and science in a way that will be representative of the social make-up of the country.

SAASTA aims to run pilot studies that will focus on these different public audiences in the 2010/2011 financial year. These studies will be designed against the backdrop of the findings and recommendations presented in the HSRC report, but with specific attention being paid to the unique characteristics of the South African context.

After completion of the intended pilot studies, the process may be refined and rolled out periodically at a national level to ensure the availability of current and updated data.





Nadine van Tonder, an electrician who works for Eskom, is the first female electrician to work on the live networks in the Western Cape. Photo: NACI

Sharing the feminine side of science, engineering and technology

SAASTA has been involved in numerous projects to help break down the barriers that exist – or are perceived to exist – to women entering careers in SET. Many of these projects can be successfully used in science centres to encourage young visitors to pursue their passion for science. Here are a few examples:

- Career exhibits (often together with brochures and/or young female role models giving presentations/ answering learners' questions).
- Women in Physics initiative.
- Careers in Biotechnology expo (with a strong emphasis on women).
- Careers in Space Science expo (again with a strong emphasis on women).
- Articles in youth media (often with a focus on women role models in "unusual" careers).
- Media round table events (where women take an active, leading role in communicating research).

Changing perceptions of women in SET

In 2008, Science Engineering and Technology for Women (SET4W), a permanent national advisory committee of the National Advisory Council on Innovation (NACI), commissioned the University of Pretoria to conduct a study, titled "Changing Perceptions of Women in Science". The objective was to learn from the experiences of successful women in SET, and how to use these lessons to develop policies and interventions that may successfully attract and retain more women in SET careers.

SET4W aims to achieve greater equality between women and men by bringing a gender equality perspective into

everyday policy-making, and by complementing the more traditional approaches of promoting gender equality, such as legislation and positive action.

SAASTA was given the task of raising awareness, encouraging debate and changing public perceptions of science and gender, based on the findings of the University of Pretoria study. The challenge was to extract what can be learned from the life experiences of the participants in the study and to translate these lessons into practical interventions.

SAASTA produced a booklet with career histories of successful women in SET, which is being used to raise awareness, encourage debate and change public perceptions of science and gender. A media campaign was launched to profile these women in the South African media.

In June 2009, Beverley Damonse, Executive Director of SAASTA, presented a paper at the ECSITE Conference (hosted by the European network of science centres and museums) in Milan, Italy, which focused on innovative ways in which science centres can use research such as the SET4W study to create awareness, encourage debate and change the public perceptions of science and gender.

Sharing the feminine side of SET (continued)

Proposed examples include touch-screen kiosks with information on inspirational women with high-profile careers in SET; and media round tables where women take an active, leading role in communicating research.

The touch-screen kiosks will enable girl learners to listen to the interviews, see the women scientists in their workplace, and discover that, as expressed by most of the women in the interviews: "Absolutely anything is possible. Do whatever you really want to do in life, irrespective of your background or your circumstances."

As a result of the success of the SAASTA media round table events, this model is now being expanded in science centres around South Africa (see article on page 4). By encouraging the science centres to ensure that there are women scientists on their panel of experts, the image of women scientists in the media will be greatly improved.



Judy Coates is head of the Biomedical Research Programme at Mintek, South Africa's national mineral research organisation. The programme is a partnership between Mintek and Harmony Gold, and aims to find novel industrial applications for gold. Photo: NACI



Ryneth Nengovhela is a scientist at Exxaro, a South African-based mining group and the fourth-largest coal producer in the country. Photo: NACI

The growing participation of women in SET

A Facts and Figures study that was published in August 2009 by SET4W reveals that there has been considerable improvement in the total number of women in SET in South Africa. Currently, the overall participation rate compares favourably with many European and North American countries where attempts to redress gender imbalances have a far longer history.

Between 2003 and 2005, the percentage of female research and development (R&D) personnel increased steadily in the business and higher education sectors and in the science councils. The majority of female R&D personnel are employed in the public sector but are still in the lower employment ranks. Most women (particularly those in the higher education sector) are involved in the social sciences. There is very limited female representation in the engineering sciences and applied technologies. However, a closer examination of the data shows that there is a pattern of decreasing percentages as the level of study moves upwards from undergraduate to doctoral levels. So, while there have been improvements in the numbers of women entering into SET careers, there is still much to be done to achieve equality in several areas.



Unearthing – and sharing – ancient secrets

South Africa is remarkably wealthy in palaeontological and archeological heritage. We are considered “The Cradle of Humankind” for our extensive fossil record, which takes us back a long time before humans. Dinosaurs, African bears and short necked giraffes are among the myriad strange and wonderful beasts that bear testimony to our evolutionary story – records of our African origins, written in stone.

The science communication unit of SAASTA manages the implementation of four thematic focus areas for the DST, one of which is African Origins Month. The focus of this theme is on South Africa’s remarkable palaeontology, archaeology and wealth of indigenous knowledge. The specific scientific themes for the thematic months are selected due to their obvious geographical advantage to South Africa.

For African Origins Month 2009, SAASTA appointed Jive Media, Marketing and Communications to develop communication material that would promote South Africa’s sites of archaeological and palaeontological significance to local and international tourists. The goal

was to highlight the science taking place at these sites, and to profile scientists and careers in science.

The team travelled to key palaeontology and archaeological sites to conduct their research, namely the Cradle of Humankind, uKhahlamba Drakensberg Park, Mapungubwe Cultural Landscape, Langebaan Fossil Park, Nelson Bay Cave in the Southern Cape and the Wildebeestkuil Rock Engraving site near Kimberley in the Northern Cape.

The team, which includes a palaeontologist, a science communicator, editor, photographer and film production crew, is currently developing a selection of material that

communicates the scientific information stemming from the research conducted at the various sites, while also promoting the sites as compelling tourism options. The material includes:

- A blog highlighting not only the science but also the information of value to the tourist (for example: information and views about the accommodation and the facilities at the site). The blog will include short video inserts with insights from experts and tour guides.
- Weekly articles aimed at national newspapers, which will promote the sites and drive traffic towards the blog.



Unearthing – and sharing – ancient secrets (continued)

- A tourist information brochure that will inform local and international visitors of the richness that South Africa offers in terms of palaeontology and archaeology. An informed description of each of the sites visited as well as relevant contact details will ensure the brochure is of value to tourists. It will include sources of information for accommodation and other places of interest in each area.
- A science awareness brochure, which aims to ignite the interest of young readers in the fields of palaeontology and archaeology and then inform them of potential career paths in these fields. Interviews with young scientists and researchers at the sites will be included in the brochure.
- A coffee table booklet containing spectacular visuals combined with informative text, laid out in an easy-to-read format.
- High definition television footage of the sites.

The palaeo-tourism sites of South Africa present an opportunity to reach out to national and international audiences, enticing them with the wonder and excitement of scientific discovery. SAASTA believes that this project will have further benefits such as developing the capacity of guides and educators at the palaeontology sites, thus also promoting careers in science awareness and communication.

“The palaeo-tourism sites of South Africa present an opportunity to reach out to national and international audiences, enticing them with the wonder and excitement of scientific discovery.”

PREVIOUS PAGE:

PhD palaeontologist, Nonhlanhla Vilakazi, gets up close and personal with an antelope fossil at the West Coast Fossil Park.

Dr Deano Stynder, curator of Cenozoic Palaeontology at Iziko Museums, shows Nonhlanhla Vilakazi the skull of the African bear found at the site of the West Coast Fossil Park near Cape Town.

THIS PAGE:

Dr Deano Stynder points out the location where the African Bear was found at the West Coast Fossil Park.

Science of the very small gets its own awareness programme

Nanoscience may be the study of the very, very small, but it has become a big buzz word in the world of science. Scientists believe it can solve many of the world's serious health, energy and environmental problems, and South Africa has staked its claim in the future of this science to ensure that our industries are not left behind.

The possibilities of nanotechnology may seem endless, but there are potential problems that concern people. As with all new technologies, it holds potential risks and attention must be paid to health, safety and ethical issues.

The DST has therefore established the Public Engagement on Nanotechnology (PEN) programme to ensure a clear, balanced public understanding of the scientific principles and issues related to nanotechnology. It also helps to promote science communication and raise the profile of science communicators at a national level. SAASTA has been given the mandate to manage this programme.

In the past year SAASTA worked with the DST and the South African Nanotechnology Initiative (SANi) to develop a new nanotechnology communication and awareness programme. This entailed workshops in Belgium and South Africa. The local workshop for stakeholders was chaired by SAASTA.

SANi is a well-organised network of academics, researchers and engineers from universities, the private sector and research councils, all of which have the common goal of involving South Africa in the emerging field of nanotechnology and nanoscience.

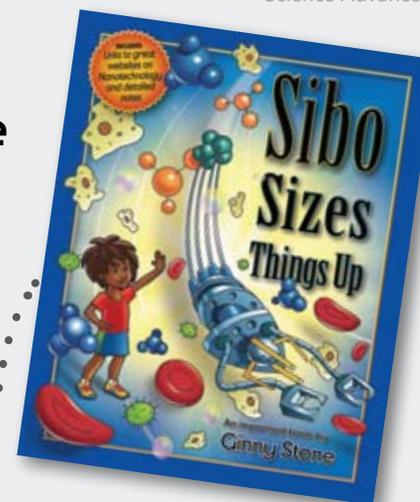
Mthuthuzeli Zamxaka, the SAASTA-based coordinator of the PEN programme, says "South Africa is heading for an era of great nanotechnology discovery. We have the opportunity to use nanotechnology to supply solutions specific to African problems. South African youth should realise that there are many exciting opportunities that this emerging technology may provide."

In February SAASTA reviewed more than 20 proposals for nanotechnology communication projects to the value of about R4 million, and implementation of these projects should start soon.

"Nanotechnology has the potential to significantly change the way we do things in our daily lives. The public has to be prepared for this," says Zamxaka. "The PEN programme will help the public to make informed decisions."

Nanotech for little learners

Nanotechnology is probably going to shape a large part of the lives of today's children. In order to help prepare young readers for this, SAASTA commissioned science writer Ginny Stone to write the country's first nanotechnology book for children. Stone has already published seven books featuring heroine and junior environmental activist "Sibo". She is also a regular



contributor to the science pages of the youth magazine, *MiniMag*. The book on nanotechnology is called *Sibo Sizes Things Up*. "Nanotech is the wave of the future. Our kids will be nanokids," she says.

Achievements

In 2008, SAASTA conducted a media round table session on nanotechnology that was part of a reporting science conference organised by FrayIntermedia in Johannesburg. Lorenzo Raynard, Manager of SAASTA's science communication unit, attended a workshop hosted by the Working Party on Nanotechnology (WPN) and the Organisation for Economic Co-operation and Development (OECD) in Delft, the Netherlands.

The key outcome of the workshop was a fact sheet developed by SAASTA, which was later translated into a youth-focused article in the *MiniMag, Easy Science*, April 2009 edition. Five hundred copies of both the fact sheet and youth article were distributed to youth participating in the MinQuiz competition, hosted by Mintek on 14 May 2009, and 200 000 of each were printed and distributed during National Science Week 2009.

Creating public awareness of hydrogen and fuel cell technologies



The Department of Science and Technology has identified hydrogen and fuel cell technologies (HFCT) as a “frontier science and technology” platform that will allow proactive innovation and knowledge generation to benefit from South Africa’s natural resources. Once again SAASTA is playing a valuable role in bridging the gap between the science and the public awareness thereof.

The National Hydrogen and Fuel Cell Technologies Research, Development and Innovation strategy was approved in May 2007. Subsequently, Mintek was appointed as host of the Green Transport Programme (GTP), which focuses on conducting feasibility studies on alternative fuels, understanding regulatory requirements and securing private sector participation for these alternatives. Three HFCT centres of competence have also been established, namely Hydrogen South Africa (HySA) Systems for systems integration and technology validation, HySA Catalysis and HySA Infrastructure.

In November 2009, the public awareness, demonstration and education platform of the HFCT was entrusted to SAASTA, with the mandate to implement and develop information channels to keep the public informed about hydrogen and fuel cell technologies. The main objective is to create awareness, visibility and acceptance of the benefits and safety of using hydrogen and fuels cell technologies as alternative energy sources in South Africa.

The HFCT public awareness platform aims to familiarise and inform the public and key decision-makers in South

Africa about the benefits of using hydrogen and fuel cell technologies by demonstrating projects that involve the use thereof. “The school curriculum, as well as exhibits on hydrogen fuel cells, newsletters on cutting-edge research and alternative energy-related activities within the hydrogen industry, are all on our programme for the near future,” says Sharon Mashau, who is responsible for the HFCT Public Awareness programme at SAASTA. “One of our first projects was installing demonstration hydrogen fuel cells in four science centres around South Africa.”



Why hydrogen fuel cell technologies?

Scientists aim to develop hydrogen fuel cell and infrastructure technologies to generate electrical power quietly and efficiently, without pollution. Unlike power sources that use fossil fuels, the by-products from an operating fuel cell are heat and water.

A fuel cell converts the chemicals hydrogen and oxygen into water, and in the process produces electricity. Most fuel cells in use today use hydrogen and oxygen as the chemicals. A fuel cell provides a direct current (DC) voltage that can be used to power motors, lights or any number of electrical appliances.

Scientists and manufacturers have a lot of work to do before fuel cells will become a practical alternative to current energy production methods. Still, with worldwide support and cooperation, the goal to have a viable fuel cell-based energy system may be a reality in a couple of decades.

Source: Howstuffworks.com

Bringing the universe down to earth

The South African astronomy community enthusiastically participated in the International Year of Astronomy (IYA2009) in 2009, the largest science education and public outreach event in history. The final count of countries involved in IYA2009 stands at 148, confirming that the IYA2009 network is the largest ever in science. Activities and events from these participating nations paint a picture of professional and amateur astronomers bringing the universe “down to earth” through countless projects, and opening the eyes of the public to the wonders above.

IYA2009 was launched by the International Astronomical Union and UNESCO under the theme “The Universe, Yours to Discover”. The aim of the Year was to stimulate worldwide interest, especially among young people, in astronomy and science. It also celebrated the 200th anniversary of the first use of an astronomical telescope by Galileo Galilei.

Never before in the astronomy field in South Africa has a group of this magnitude or composition come together for a common goal in such a manner. This national team of stakeholders brought with it immense expertise, knowledge and ideas. Both professional and amateur astronomers, observatory education and outreach officers, planetarium staff, science communication professionals, government officials and science staff, came together to create a pool of human resources unlike any before.

A South African IYA2009 Steering Committee was established in 2008, following wide consultation within the astronomy community, including a number of open astronomy outreach stakeholder meetings. SAASTA was asked to manage the local issuing of grants for the project.

Grants of over R1,75 million in DST funding were issued to 27 grantholders.

In the time preceding 2009, networks were established; a database of astronomy resources in the country and a list of best practice activities were created; staff and students were trained in astronomy outreach activities; and resources were prepared.

In South Africa, IYA2009 was launched with a Star Party at Sutherland on 30 and 31 December 2008. SAASTA conducted two short audience surveys at the event. It also supported the initiative with media coordination, science communication and translation, science centre development and support, and training on how to develop exhibits using minimal resources.

As part of its commitment to IYA2009, SAASTA developed an exhibit based on a starlore booklet, “The Crocodile who swallows the Sun”; and a touch-screen information kiosk. The exhibit travelled to SciFest Africa at the end of March 2009, to the MTN ScienCentre in Cape Town and then to Kimberley for the national launch of the National Science Week. Hartebeesthoek Radio Astronomy Observatory



Young school children in the Western Cape got a glimpse of a whole new world, when they participated in some of the IYA2009 outreach activities.



The aim of the International Year of Astronomy was to stimulate worldwide interest, especially among young people, in astronomy and science under the central theme “The Universe, Yours to Discover”.

Bringing the universe down to earth (continued)

hosted the exhibit as part of their IYA initiative, after which the exhibit travelled to SciBono in Johannesburg where it is currently being hosted.

IYA2009 was never seen as a "one-off" event lasting just one year, but rather as a means of creating structures for collaboration, lasting self-sustaining activities and innovative concepts for the communication of astronomy. Most of the IYA2009 projects will continue beyond 2009.

Grants of over R1,75 million in Department of Science and Technology funding were issued to some 27 grantholders.



The world of information - as well as how, and how much of it, people learn - is changing exponentially.

In 2006, it was estimated that 1.5 exabytes of unique new information would be generated in that year alone. It is also estimated that the amount of new technical information is doubling every two years. For students starting a four-year technical or university degree, this means that half of what they learn in their first year of study will be outdated by their third.

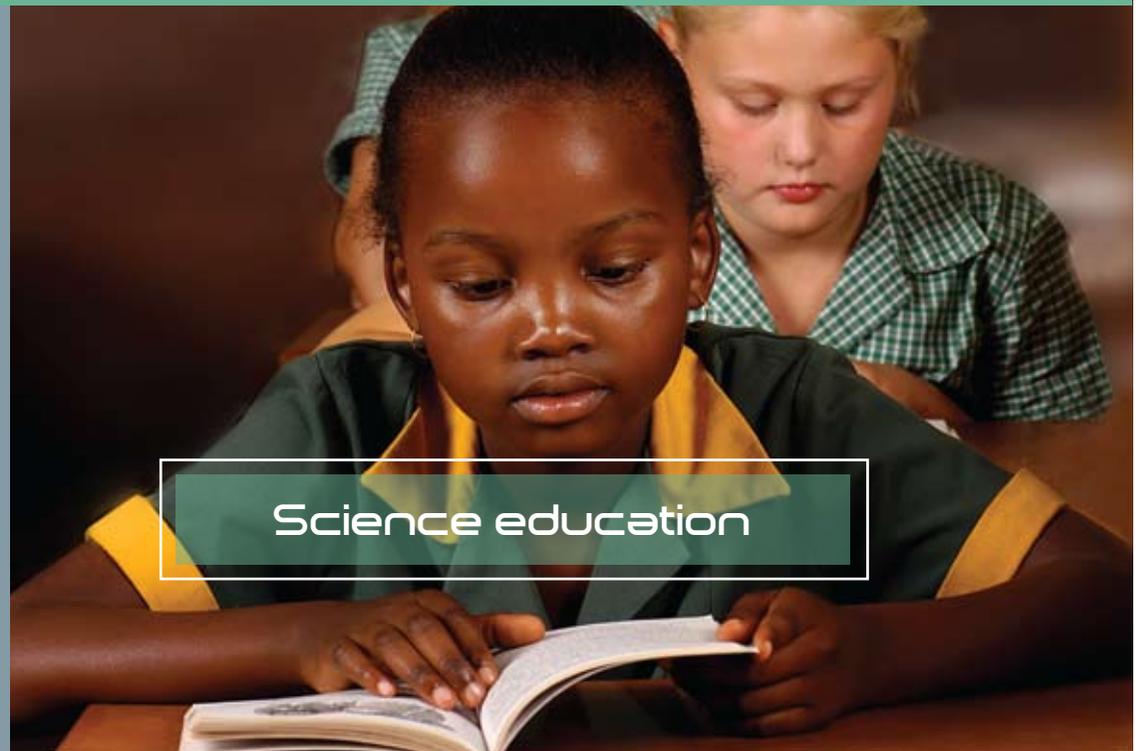
The question is, how can we teach the children of today, to cope with the world of tomorrow?

DID YOU KNOW ...?

The top 25% of the population in China (ie, with the highest IQs) is larger than the total population of North America.

In India it is the top 28%. Translation: China and India have more honours children than the US has children.

How is South Africa equipping its youth to compete in the global village?



Science education

It's all in the numbers

Harmony Gold Mining Company, the fifth-largest gold producer in the world, entered into a R7,5 million sponsorship agreement with SAASTA to fund the National Science Olympiad for three years. This will give SAASTA the opportunity to expand the project to include schools that have not previously entered the competition, thus growing the average 10% of South African schools that currently participate in the Olympiad.

"We are determined to contribute to the development of science and technology in South Africa and to promote excellence in these fields," says Jackie Mathebula, Executive, Corporate Affairs at Harmony.

"This agreement makes good business sense since, as a mining company, scientists and engineers are core to our business. We need the services of excellent mining, electrical and mechanical engineers and many others in these fields, and believe that through this sponsorship we are helping to develop South Africa's most valuable natural resource."

Since 2005, the National Science Olympiad has offered learners from grades 10, 11 and 12 the opportunity to compete in a science-based competition against fellow learners from across South Africa and neighbouring countries such as Namibia and Lesotho.

One of SAASTA's greatest challenges, however, is that on average, only 10% of high schools in South Africa participate in the competition. Other challenges include the poor performance of some learners who sit for the exam, plus the fact that the competition generally appeals more to the more able learners. There is a dire need to identify and nurture others who are talented, especially those from disadvantaged communities.

Harmony schools programme

As the main sponsor of the Olympiad, Harmony will now expand the project to high schools in the areas where the mining house operates. Harmony sees this as an opportunity to plough resources back into its surrounding communities and to increase the human capital in SET, particularly in mining-related disciplines.

"As a mining company, we realise that our business is a finite one and that we have a responsibility towards the towns created around our mines," says Mathebula. "Our agreement with SAASTA helps us to invest back into these communities and to support their future development."

The schools programme will run for three years and will target mathematics, physical science, life sciences and life orientation teachers, as well as learners who were in grade 10 in 2009. Eighteen schools in Gauteng, the Free State, Mpumalanga and North West will take part.

The programme will offer free registration for a number of learners in the Science Olympiad, as well as exposure to SET career opportunities and a week-long camp for the 15 top grade 10 maths and physical science learners per school. Learners will be taken on visits to industries, while teachers will be offered workshops on a variety of topics such as career planning, motivating talent, study choices, and content and methodology in maths, physical science,

life orientation, and life sciences. Furthermore, resource material will be donated to the schools' libraries.

SAASTA and Harmony believe that the programme will go a long way towards identifying and nurturing talent, increasing participation and performance in the sciences at school, developing teachers of the physical sciences, maths, life sciences, and life orientation, broadening teacher and learner awareness of SET careers, and ultimately helping to address the shortage of skills in the SET sector.

Science Olympiad awards ceremony

The annual Science Olympiad awards ceremony is always a highlight on the SAASTA calendar. In 2009, the ceremony was held at Gallagher Estate in Midrand and the Minister of Science and Technology, Naledi Pandor delivered the keynote address.

This ceremony traditionally follows Science Focus Week, which consists of stimulating lectures, excursions, industry visits and fun events to which 100 participants who excelled or showed potential in the competition are invited.

"South Africa has strengthened its programmes for identifying, nurturing and expanding talent in mathematics and science," said the Minister at the awards ceremony.



Dylan Wakefield, Brent Harrison, Liang Yu and Moukangwe Katlego Kgobalala, National Science Olympiad participants who won a trip to London to attend the International Youth Science Forum. Suzie Maruma of SAASTA (far right) accompanied them.

"The Olympiad is part of this vital search for talent. I'm hopeful that all Olympiad award winners and participants will go on to become our leading scientists. It's important for you to begin thinking of yourselves as South Africa's future."

London visit

One of the traditional prizes of the National Science Olympiad is a trip to London to attend the London International Youth Science Forum. Awarded to the learners who excel in the four different Science Olympiad categories, this offers a unique opportunity to participate in an international event that attracts science students from around the world.

Last year, winners Dylan Wakefield (Maritzburg College, KwaZulu-Natal), Brent Harrison (King Edward High School, Eastern Cape), Liang Yu (Pretoria High School for Girls, Gauteng) and Moukangwe Katlego Kgobalala

“Harmony’s involvement will see the Science Olympiad schools programme expand to high schools in and around the company’s mining operations – enabling it to invest back into these communities and their future development.”

DID YOU KNOW ...?

It is estimated that by 2023, when the children born this year are starting their secondary school careers, it will only take an R8 000 computer to exceed the capabilities of the human brain. While predictions further out than 15 years are hard to make, expectations are that by 2049, the same value computer will exceed the computational abilities of the human race.

Promoting the science of today, for the world of tomorrow



It's all in the numbers (continued)

“ Quite simply, this sponsorship makes good business sense.

Scientists and engineers are core to our business ... we believe that through this sponsorship, we are helping to develop South Africa's most valuable natural resource. ”

Jackie Mathebula, Executive: Corporate Affairs, Harmony Gold Mining Company

(Jane Furse Comprehensive, Limpopo), explored future developments in the sciences with lecture demonstrations, specialist seminars and debates led by a team of scientists and experts. The programme of the 50th Forum, which attracted over 300 of the world's leading young scientists from more than 40 countries, was based on the theme "Science Serving Mankind".

According to Laing Yu, the Forum was "the perfect combination of enlightenment and enjoyment. Every lecturer at the forum was an experienced expert who knew exactly how to captivate and fascinate us," she says. "While listening to the lectures, I was exposed to many new ideas

and the latest developments in various scientific fields. For me, the highlights of our trip were our visits to renowned universities such as Cambridge and Oxford, and research centres, including Rutherford Appleton Laboratory and The Babraham Institute.

"On a number of occasions we even engaged in debates and exchanged ideas with young scientists from all over the world. This stretched my mind to a new dimension. Attending the Forum gave me a newfound confidence and desire to learn, as well as lasting memories of strong friendships to take home with me."

CELEBRATING A DECADE OF SCIENCE OUTREACH

National Science Week (NSW) – an annual countrywide celebration of science led and funded by the Department of Science and Technology (DST) – celebrated its tenth year of science outreach in 2009.

During this time NSW has developed into a national brand and become a permanent part of the school calendar, exposing learners, educators, the public, politicians and the community at large to the value and impact of science, engineering and technology in their lives.

In the last five-year cycle (2005 – 2009) a total of 791 384 learners participated – an average of 158 276 learners each year. More than 86% of the participating schools were from disadvantaged communities and rural areas (41,5% from townships; 41,5% from villages; 13,8% from suburbs; and 3,2% from farm areas).

791 384

A surge of new technologies and innovations is making it easier than ever to reach a large audience, but harder than ever to really connect with it.

People are changing the way they seek, find, share and learn new information.

How can we help to make SET information more immediate and more accessible to South Africa's youth?

DID YOU KNOW ...?

According to www.hightechscience.org, knowledge is growing so fast that 90% of what we will know in 50 years time, will have been discovered in those 50 years.

One need only to look at the pace of technology development and uptake to see the truth in this statement. For example, the first commercial text message was sent in December 1992. Now, the number of text messages sent and received each day exceeds the population of the planet.

Promoting the science of today for the world of tomorrow



Science awareness

Training science centre managers of the future

A national capacity building project is striving to expand the pool of future science centre managers and staff. This forms part of a larger Department of Science and Technology plan to establish an extended network of well-functioning science centres around the country.

The project, called SAASTA Science Centre Capacity Development, focuses on skills development in South African science centres. Some 25 staff members from science centres, outreach programmes at the National Research Foundation's national facilities, and science outreach staff at higher education facilities, were selected for the training programme in 2009.

Courses and workshops conducted to date have focused on the presentation of science shows, proposal writing and project management, exhibit building, volunteering and explaining. The workshops are presented on an ongoing basis in Gauteng, the Western Cape and KwaZulu-Natal.

"The proposal and report writing workshop conducted in 2009 was attended by 47 South African science centre staff from 22 different centres," says Shadrack Mkansi, Manager of SAASTA's science awareness unit. "Soon after the workshop, these people submitted proposals for SAASTA grants, and 20 were approved. The proposals showed a remarkable improvement on those we received previously."

A three-day exhibit-building workshop held in each of the training areas resulted in science centre staff being able to develop working exhibits which were left at the host centres for their use.



Bafedile Kgwadi of SAASTA (right) and Sivuyile Manxoyi of the South African Astronomical Observatory at Questacon in Australia. Photo: ScienceWise.

Assistance from down under

Australia, with its strong science centre infrastructure, recently partnered with SAASTA to extend the management experience of local science centre staff. A 12-day professional development workshop on science centre management was presented by Professors Sue Stocklmayer and Mike Gore from the Australian National University's Centre for Public Awareness of Science (CPAS). The workshop was funded by AusAID (via the DST), the Australian Centre for the Public Awareness of Science and the Australian National University, and was held at the Sci-Bono Discovery Centre in Johannesburg. About

20 South Africans and five delegates from Lesotho attended.

This was the first leg in the AusAid-funded project in which nine of the best communicators from South Africa and Lesotho were selected to go to Australia to undertake a Graduate Certificate in the Theory and Practice of Science Centres at CPAS.

As part of this 10-week course they were able to gain some practical experience by spending two weeks at the Questacon science and technology centre working alongside exhibition designers and planners. The students benefited by seeing how organisations like Questacon approach science education in Australia and how the process might be tailored to suit their own specific audience needs at home.

"As well as providing experience, training and a professional qualification, going to Australia has created a new platform for interacting with people and forming relationships that we hope will continue well into the future," says student Sivuyile Manxoyi of the South African Astronomical Observatory (SAAO).

Professor Sue Stocklmayer agrees, "It's been a great experience for everyone having these students here. I think they've been able to benefit from the unique and

"It has been a great experience for everyone having these students here – they have been able to benefit from our unique and highly multifaceted approach. These are some of the best communicators on the African continent and they will no doubt play a leading role in the development of science awareness in South Africa and Lesotho."

Professor Sue Stocklmayer, of the Australian National University's Centre for Public Awareness of Science (CPAS)

highly multifaceted approach at CPAS, which combines coursework, research and practical experience. These are some of the best communicators on the African continent and they will no doubt play a leading role in the development of science awareness in South Africa and Lesotho. We're definitely expecting to stay in touch."
(Quotes courtesy ScienceWise).

47 South African science centre staff from 22 centres attended the proposal and report writing workshop conducted in 2009.

47

20 proposals for SAASTA grants were subsequently approved, all of which showed a remarkable improvement on those received previously.

20

DID YOU KNOW ...?

- Today, there are an estimated 540 000 words in the English language ... about five times as many as during Shakespeare's time. (This includes new words for new technologies, such as web-surfer, widget, blog, Internet, e-learner, dot-commer ...)
- According to comScore Inc, a leader in measuring the digital world, more than 113 billion Internet searches were conducted in July 2009. This is a 41% increase on the same period in the previous year. To whom were those questions directed before public adoption of the Internet?

How are we sharing SET skills and information with younger generations?



Crossing borders

When the American Museum of Natural History (AMNH) joined the Southern African Large Telescope (SALT) as a partner, their proposal for an agreement with the SALT Board included sponsorship for broader education and outreach efforts.

Given the AMNH's mission – "to discover, interpret and disseminate, through scientific research and education, knowledge about human cultures, the natural world and the universe" – a joint sponsorship with SALT has the potential to benefit not only astronomy outreach efforts, but also South African society as a whole.

In June 2008, three senior AMNH staff members visited South Africa to meet with the NRF leadership and SAASTA to discuss using science facilities and informal networks for effective public outreach programmes. They visited nine local facilities where such programmes are in place, which gave them the opportunity to learn about South Africa, its history and educational system, scientific research projects, and the importance of developing the educational system by using research facilities and their researchers as resources. Following this tour it was agreed that AMNH resources such as science seminars and bulletins could be useful to several of the outreach staff and educators. The Museum also offered to assist South Africans with skills development in areas such as programmes, exhibition production and evaluations.

AMNH further agreed to help communicate the science of SALT and other South African science stories to a broader audience. AMNH Science Bulletins produced a bulletin (a topic-specific documentary aimed at teachers) on SALT and another on South African biodiversity and conservation, and disseminated these through their network. Many exciting education and outreach products



Seen during their visit to the American Museum of Natural History in New York are NRF outreach staff and their hosts. From the left are: Haelee Kim of AMNH; Shadrack Mkansi, Manager of science awareness at SAASTA; Dr Gillian Arendse of iThembaLABS; Sivuyile Manxoyi of the South African Astronomical Observatory and SALT; Armstrong Mashakeni of the National Zoological Gardens; Taka Komatsu, an intern from the Science Museum in Tokyo working at AMNH; Gaji Maigajana of the South African Institute for Aquatic Biodiversity; Sam Rametse of the Hartebeesthoek Radio Astronomy Observatory; Elisa Fraser of the Hermanus Magnetic Observatory; and Sibongile Mokoena of the SA Environmental Observation Network.

such as space shows and software content are currently being adapted to the local context and school curriculum, and made available to South African outreach staff.

In January 2009, seven staff members from NRF facilities

visited the Museum in New York to familiarise themselves with AMNH public programmes, online and digital products, exhibitions and student programmes.

"The AMNH Education team put together an excellent

“What struck me most was the fact that AMNH activities are designed around expertise. It is clear that education is a ‘discipline’ that is driven by highly skilled and qualified individuals or groups. The museum manages to link research and practice together by getting the professionals involved.”

Dr Gillian Arendse of iThembaLABS

itinerary for our visit,” says Sibongile Mokoena, Science Education Outreach Co-ordinator at the SA Environmental Observation Network (SAEON). “The collaboration with other departments provided the NRF team with a good overview of the many programmes at the Museum.”

Some of those who participated in this visit have subsequently enrolled for AMNH courses. “I have enrolled for two courses,” says Gaji Maigajana of the South African Institute for Aquatic Biodiversity (SAIAB). “My participation will give me an opportunity to develop resources to meet certain requests from teachers. I hope to establish a group of teachers to serve as a nucleus, and who could register for the same course at a later stage.”

Dr Gillian Arendse of iThembaLABS says, “What struck me most was the fact that AMNH activities are designed around expertise. It is clear that education is a ‘discipline’ that is driven by highly skilled and qualified individuals or groups. The museum manages to link research and practice together by getting the professionals involved. Each intervention is planned and debated thoroughly.”

The building of a high-quality skills base in South Africa is a chief driver of the NRF, and the organisation believes that the AMNH cooperative project can help to increase the capacity of staff involved in its education and outreach programmes.

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The Southern African Large Telescope (SALT)

Photo by Janus Brink.

Observatory is reaching for the stars

The Johannesburg Observatory site is unique. It includes a 105-year-old telescope, astronomical observation platforms and telescopes, a Herbert Baker library, three floors of open exhibition space, student laboratories and office space for administrative staff. This is all complemented by wide open surrounding spaces and a panoramic view of Johannesburg city and surrounding areas.

The combination of its historical buildings, scientific heritage, elevation and view are unmatched. The working 26-inch Grubb telescope, the mechanics of its moveable viewing platform and its dome, are entirely unique and intriguing to people from all backgrounds and age groups in Johannesburg.

All of this makes it an ideal centrepiece for SAATA's broader activities – something that was confirmed by a preliminary scoping exercise completed in November 2008. This exercise considered site developments undertaken to date and recommended that the current historic Johannesburg Observatory site be developed into a centre of excellence in the sciences that combines science educational outreach with hands-on interactivity.

The scoping exercise was the first step in the feasibility study that will now examine the other aspects of the project. This includes relevant market/sector research and analysis, structural requirements, issues of access and movement, science centre developments, and financial and economic considerations and scenarios for the complete development of the site. The scoping document covers similar best practices followed locally and internationally and includes a project management plan to complete the study with time-lines, proposed budget and phases.

In 2009, SAATA appointed a service provider to undertake a complete feasibility study and develop a master plan for the expansion of the Johannesburg Observatory site, with a view to it becoming the focal point for all SAATA education, awareness and communication programmes.



Students seen on a recent educational visit to the Johannesburg Observatory site.

“It is envisaged that the fully developed Johannesburg Observatory site will become a centre of excellence in the sciences, combining educational outreach with hands-on interactivity.”

A brief background

In 1903 the Transvaal Meteorological Department was created, out of which the Republic Observatory later grew. The 35-hectare site in Johannesburg on which the Observatory stands was declared the city's first meteorological observatory site, the land having been donated to the government by the Bezuidenhout family for the purpose of "science carried on in an observatory, for meteorological, astronomical or strictly allied subjects".

Astronomer Dr Robert Innes, then Secretary and Librarian of the Royal Observatory, moved from Cape Town to become the director, and Herbert Baker designed a meteorological observatory, which was built on the hill and opened in 1905. The small, attractive stone building with its cupola still sits on the hill. The Observatory contained a seismograph to record mining tremors, an evaporation pan and a device to record lightning strikes, which are particularly virulent on the Witwatersrand.

The first telescope, installed in 1906, was lent by the Imperial Observatory in Russia. What was then known as the Transvaal Observatory became the Union Observatory, and the large domed building that now dominates the site was ready in 1912.

Meanwhile Innes had started efforts to obtain a 26½-inch (72cm) telescope, a mission that took him 20 years. In its first six months of

operation, 303 new double stars were discovered with the aid of this telescope. By 1970 a further 6 000 were discovered. Altogether, more than 20 000 double stars have been catalogued at this site.

In 1961 the Observatory officially changed its name to the Republic Observatory. In 1972, due to poor visibility caused by light pollution, the observatory had to be partially closed down. Some of the instruments were moved to the new South African Astronomical Observatory (SAAO) near Sutherland in the Northern Cape, where they still reside.

The site was then taken over by the CSIR for telecommunications research. In the late 1980s the Associated Scientific and Technical Societies of South Africa (AS&TS) bought the building. In 2003, the AS&TS transferred management of the Observatory to SAASTA.

The Observatory remains in use, and the main telescope is used by amateur astronomers and members of the public.

More than 20 000 double stars have been catalogued at the Observatory since the installations of the 72cm telescope in the 1920s.

A piece of history

The original Observatory in Johannesburg was initially a meteorological institution. When it was later decided to diversify into astronomical observation, the then director, Robert Innes, acquired a telescope with the help of Dr Theodore Reunert. It was the Observatory's first piece of astronomical equipment.

Then known as the nine-inch telescope, the instrument was installed in 1907, opening up a whole new view of the universe. One of the first observations made through the telescope was the apparent disappearance of the rings of Saturn. Fortunately, all it took was a slight retouching of the objective lens by the manufacturer, and both the telescope (and the universe) was returned to normal. The telescope was renamed the Reunert Telescope in 1924, in honour of Dr Reunert's instrumentation.

Innes, who was also the founding director of the Observatory, was using the telescope in conjunction with a series of photographic plates when he discovered Proxima-centauri (the star closest to our sun) in 1915. It is a tiny Red Dwarf star some 4,22 light years away from earth, and the third member of the Alpha Centauri triple system. This was the first of many multi-star observations that Innes subsequently documented, along with his observations of the large satellites of Jupiter.

Although the Reunert Telescope is not the most convenient instrument to use for modern-day observational astronomy, it has a lot of historical significance. To this day, nearly a century later, Proxima Centauri still holds the record as being earth's nearest stellar neighbour.

Although the Reunert Telescope is not the most convenient instrument to use for modern-day observational astronomy, it has a lot of historical significance. To this day, more than a century later, Proxima Centauri still holds the record as being earth's nearest stellar neighbour.

In 1972 the Observatory donated the Reunert Telescope to UNISA, where it was installed in a roof-top observatory on the Theo van Wyk building on Muckleneuk Ridge in Pretoria.

At the end of 2008 the telescope was dismantled, moved back to the Observatory in Johannesburg, stripped of rust and old paint and re-conditioned. Minor upgrades have been made to its controls, with the installation of electronic counters.

In July 2009 the telescope was reopened at the Johannesburg Observatory and is currently used by school groups and the general public.



The Reunert Telescope, pictured at the original Transvaal Observatory, as it was known in the early 1900s.



The Reunert Telescope, currently installed at the Johannesburg Observatory, where it is used by school groups and the general public.

TECHNICAL SPECIFICATIONS

- **Aperture:** 9 inches (22,8cm)
- **Manufacturer:** Grubb
- **Manufactured:** in 1877

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