

ANNUAL REPORT 2018



FOREWORD



Director:

Dr Trevor van Louw

Looking back over the sixth year of SUNCEP's existence, we quite rightly remain proud of the achievements that the Centre has been able to accomplish in its short history. But given the scope of the problems in education, we are at the same time profoundly aware that it would be unwise to rest on our laurels ... and stagnate by indulging in nostalgia for a period of only six years. Huge challenges will always be an integral part of SUNCEP's future ... the most serious of them still lie ahead!

It was our awareness of this that enabled us this year to continue with our existing activities with renewed zeal and dedication, and to initiate new endeavours that will realise the declared strategic priorities of the second five-year period of SUNCEP's short history, namely reinforcing programme direction, increasing member and partnership engagement, and strengthening our capacity to achieve organisational goals.

In order to realise these priorities, this year SUNCEP carried on improving its component and programme focus unremittingly. In this way it was able to deepen its collective actions and teaching through jointly conceptualising, developing and implementing appropriate high-quality projects, interventions and programmes along with existing as well as new strategic partners. This in turn meant that SUNCEP could make an even greater contribution towards the enhancement of teacher and learner capacity.

SUNCEP is profoundly aware that, in strengthening its programme focus and direction, it is dependent not only on the sustained engagement of relevant partners, but also of the value that we can offer our donors and partners. Hence the past year also saw not only a continuation of the strengthening of existing partnerships, but also an exploration of new partnerships. It is with great humility that we acknowledge that it is precisely the quality of the work produced that will make a great contribution towards the development of a wider and more diverse audience and the formalisation of partnerships.

The continuation of our activities along with our entry into new fields constantly keeps us aware that the huge challenges facing educational development means that our call for life-long learning is also applicable to us. The 5 PhDs as well as the various other qualifications obtained, along with attendance at various workshops, seminars and conferences bear witness to how seriously we take this challenge.

As an organisation SUNCEP is fully aware that our ability to achieve our strategic goals is at all times dependent on the availability of funds. Without the sustained support of our donors the achievements in our many projects related to the professional training of teachers, the promotion of learning and preparation for University studies would hardly have been possible.

We look back on 2018 with gratitude and humility as yet another exciting year filled with many highlights. We share our experiences in a spirit of transparency and with the firm determination to continue making our knowledge and expertise available to the advancement of education.

To our partners (donors, education departments, teachers, learners and parents): a sincere thanks to you for your willingness to continue being a part of our endeavour ...

Take care. Trevor

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SUNCEP TEAM









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Project Manager: Talent Development Programme Mr. Lynthon Jacobs



Project Manager: Olifants River Project Dr Christa Philander



SciMathUS Facilitator

Dr Elza Lourens



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SUNCEP TEAM









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SUNCEP TEAM







Assistant Mrs Eileen Thomas

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SUNCEP ORGANOGRAM



TEACHER PROFESSIONAL LEARNING (TPL)

In the Teacher Professional Learning component, SUNCEP offers professional learning programmes, as full qualification programmes and/or accredited short courses to currently serving teachers and education officials in Educational Leadership and Management, Mathematics, Natural and Physical and Life Sciences. Utilising a practice-based teacher professional learning approach, which consists of elements/components that entails learning that is continuous, content focussed, supportive, socially mediated and embodied, the SUNCEP full or short course qualifications is intended to create opportunities for capacity enhancement for currently serving teachers in a specific learning area/subject, by demonstrating focused knowledge and pedagogy in any teaching contexts. This being aligned to one of the target categories stipulated in the Integrated Strategic Planning Framework for Teacher Education and Development in South Africa.

SUNCEP delivers these aforementioned teacher professional learning courses in a blended format, consisting of face-to-face contact sessions, telematics or live streaming sessions and interactive elessons. These tools play an integral role in the communication between SUNCEP and the teachers and amongst the teachers. This leads to the creation of professional learning communities, which can sustainably support themselves after completion of the course. Mentoring also forms an integral part of the post teaching and learning process.

ADVANCED DIPLOMA IN EDUCATION (ADE): IP, SP AND FET MATHEMATICS

With great enthusiasm SUNCEP launched the Advanced Diploma in Education in Mathematics



Teaching for 75 Intermediate Phase, Senior Phase and Further Education and Training Phase Mathematics teachers. These teachers came from various districts across the Western Cape. This group is currently made up of 36 IP teachers, 18 SP teachers and 21 FET teachers.



The Advanced Diploma in Education in Mathematics teaching is a full qualification for currently serving teachers. This programme is delivered part-time over 2 years with the contact sessions held during school holiday periods.

The focus of this programme is to strengthen and enhance the existing specialisation of the Mathematics teacher. This qualification does not solely focus on pedagogy and content but will also focus on ICT strategies to enhance the learning of the content and pedagogy in the classroom.

Year 1 saw the course participants engaged positively with the course facilitators and left the course feeling motivated and inspired to apply their new knowledge and skills. SUNCEP has concluded its first year at the CTLI with a 100% pass rate and an average yearly attendance of 98%. In March 2019, the final year for students will commence, with graduation scheduled either for December 2019 or March 2020.

ICT INTEGRATION: STRATEGIC MANAGEMENT

SUNCEP was once again tasked with delivering the ICT Strategic Management Course for school leaders at the Cape Teaching and Leadership Institute in 2018.

There were 11 schools represented with each school team being made up of the principal and the ICT champions at that school. There were 36 participants in total. The main objective of this course was to guide the principal and their ICT champions on how to develop a Strategic Plan to introduce ICT into their schools.

After developing their strategic plans and associated operational plans, the 10 schools who attended the course are now confident in implementing their ICT strategic plans. SUNCEP would like to thank the WCED and the Cape Teaching and Leadership Institute for its support.

SCHOLARSHIP OF READING

SUNCEP was also excited to host special needs teachers (remedial teachers) from around the Western Cape and offer them a four week long reading course. The aim of this course is to teach remedial teachers how to assist learners with reading challenges. Hosting 113 teachers, with contact sessions held during the course of 2018, the course



participants engaged positively with the course facilitators. SUNCEP would like to thank the WCED and CTLI for the immense role they played in successfully delivering the course



TECHNICAL MATHEMATICS AND TECHNICAL SCIENCE

SUNCEP was also privileged to train, in 2018, the first cohort of teachers in Technical Mathematics and Technical Science. This training programme was initiated by the WCED, and funded by the ETDP-SETA. The purpose of this programme was to equip teachers in Technical Schools with the requisite skills to teach Technical Mathematics and Technical Science. SUNCEP was pleasantly surprised by a visit by the MEC for Education in the WC, Ms Debbie

Schaffer. Espousing words of encouragement, the course participants were appreciative of her visit.





DATA MANAGEMENT & DATA ANALYSIS

After once again securing funding from the Anglo American Chairman's fund, SUNCEP developed and delivered a Data Management as well as a Data Analysis course to 44 education district officials from Metro South Education District. The aim of this course was to provide the course participants the required skills to manage

large data sets. Each course was a three day course held at SU. The overall outcome of attending both courses is for the course participants to develop their data management and analysis skills so as to data informed make decisions when faced with



educational challenges within the district.



LEARNING ENHANCEMENT (LE)

The Learning Enhancement (LE) component's main purpose within SUNCEP is to support academically gifted learners in the FET phase of their schooling in Mathematics and Science. However the LE component did not restrict its activities in 2018 to this profile. LE programmes were also offered to learners at primary schools as well as learners requiring intensive support in Mathematics. In 2018 funding was made available to roll out LE programmes within 5 regions of the Western Cape and 2 regions of the Northern Cape.



HOPE@ATLANTIS, STELLENBOSCH HUB, HOPE@SWARTLAND IN THE WESTERN CAPE AND NAMASCI IN THE NORTHERN CAPE.

SUNCEP hosted FET Programmes in Mathematics and Physical Science to academically gifted learners in the regions listed above. The aim was to support them in order for them to gain access to programmes at tertiary educational institutions. Twenty five learners in each grade has been selected to receive tuition by experienced, qualified educators for five consecutive days in each school holiday period. This resulted in a number of the grade 12 learners who participated, successfully registering at institutions of higher education in 2019.







Our Statistics display the breakdown of learners in our FET Mathematics programmes who at the end of 2018 received a percentage of 60% or higher in Mathematics. This is significant since this is one of the main requirements for entry at university level.





KARMA PROJECT

This project focused purely on Mathematics to learners from the Hantam region. Learners from schools in Calvinia, Nieuwoudtville, Sutherland, Loeriesfontein, and Brandvlei were hosted in Calvina for three days at the

end of each term. Support was given in the form of consolidation tutoring programme to every Mathematics learner grade 10, 11 and 12.

Some comments taken from evaluations forms completed by FET learners in 2018:

"Was baie leersaam."

"Productive classes."

"Moeilike konsepte was goed verduidelik en die kos was lekker."

"The program is very helpful and it ensures a bright future."

"Tutor het moeilike konsepte verduidelik." "Thank you for a wonderful week with great company and great food."



LITNUM HUB

Phase one of the LitNum Hub project was started in 2016. This 3 year cycle of holiday consolidation sessions in Mathematics and Afrikaans to grades 5, 6 and 7 learners of rural schools in the Worcester region came to an end



progress of learners who have been participating in the programme, was on average better than that of their peers. In the third term of 2018 virtual classes were started to enlarge the scope of LitNum Hub learners reached. One Mathematics and one Afrikaans lesson were

broadcasted on a weekly basis by tutors to all the grade 5 learners from all LitNum Hub schools. The feedback of these sessions were that it had a positive effect on the learning experience of learners with learners becoming more engaged in the general lessons.





OLIFANTSRIVIER PROJECT

Dr Christa Philander has been hard at work in the Vredendal and surrounding rural schools to enhance the educational experiences of as many learners from that region as possible. The main activities at Olifantsrivier include support programmes in Mathematics and Science to 70 learners in grades 8 to 10, a mentorship programme to 30 grade 10 girls from Vredendal Secondary School, and science roadshows which reached about 1000 learners form grades 6 to 12 with displays and recruitment programmes. The support programmes were offered to





learners from Vredendal Secondary, as well as Nieuwoudt and Ebenhaeser Primary schools. The focus here was on the development of learners' skills, knowledge and application of mathematics and science and physical science through smaller work sessions that took place once a month. The mentorship programme serves to assist girls to develop important values that play a decisive role in the choices they have to make in life.



ESKOM SCIENCE EXPO FOR YOUNG SCIENTISTS



SUNCEP is the proud host of the annual, regional Expo for Young Scientists competition in the larger Stellenbosch region. The aim of Expo is to use scientific research projects as a vehicle to ignite school learners' passion for the STEMI subjects, to develop their research skills, and to establish a problem solving, creative approach to challenges. Expo also links to research projects in the CAPS curriculum of various subjects.





Phoebe Mgxaji Gr 9 pupil from Macassar High School, project title: "You are what you eat"

Expo at SUNCEP thanks the following sponsors; Bloemhof Hoër Meisieskool, the Department of Water and Sanitation, EMSS, Eskom, the Het Jan Marias Nationale Fonds, South African Weather Service, various faculties at Stellenbosch University, Toyota and the WCED; for sharing in our passion for science and the youth development.

Sixteen projects were selected to participate at the International Science (ISF) from 2 to 5 October 2018. These learners did us proud by bringing home 2 gold medals, 7 silver, 4 bronze, 3 highly commended and 3 special prizes! We are also proud to say that, a learner from Macassar High School, Phoebe Mqxaji, was selected to represent South Africa in Beijing from 23 – 26 March 2019!



SCIMATHUS

The SciMathUS programme is (Science and Mathematics at the University of Stellenbosch) a second opportunity university preparation programme that operates within the Stellenbosch University Centre for Pedagogy (SUNCEP). The centre is located in the Faculty of Education.

The SciMathUS programme started operating in 2001 with 40 students who wanted to improve their marks in Mathematics and Physical Science so they could access



The top achieving student of 2018 is Queen Januarie

higher education to further their studies. It has since grown into 100 students each year and has diversified its offering into Mathematics and Physical Sciences or Mathematics and Accounting. Students are given an opportunity to choose one of the two streams depending on the subjects they did in their Grade 12 year.

This programme is offered to students who have already passed the National Senior Certificate (NSC) examination but obtained results in Mathematics and Physical Sciences or Accounting that made it difficult for them to qualify for access to specific university programmes. The duration of the programme is one year. Students have the opportunity to rewrite two NSC subjects (Mathematics and Physical Sciences) while Accounting is taught and assessed by the Faculty of Economic and Management Sciences at Stellenbosch University, with improved results, students have the opportunity to re-apply to any higher education institution (HEI) in South Africa.

In 2018 we received more than 800 applications from students who wished to join the programme. The majority of applications are submitted after the announcement of the NSC results in January. From the 5th January 2018 until the 25 January the selection committee has the daunting task of identifying 100 students who qualify to be part of the programme based on the selection criteria that is being followed.



We started the year with 100 students and had a very good academic year. Below are the different NCS results for the core subjects i.e. Mathematics and Physical Science. The Accounting module is offered and assessed by the faculty of Economic and Management Sciences at Stellenbosch University, it forms part of the extended degree programme of that faculty.



Below is the results for **Mathematics in 2018**, the blue line showing the pre-SciMathUS mark while the orange line indicates the post SciMathUS marks.





2018 Mathematics: pre- and post-SciMathUS





Below is the results for **Physical Sciences in 2018**, the blue line showing the pre SciMathUS marks obtained, the orange line being the post SciMathUS marks.



2018 Physical Science: pre- and post-SciMathUS







Below is the results for the **Accounting** module that the students took part in within the faculty of Economic and Management Sciences.



SCIMATHUS ALUMNI



Saajidah Williams (Masters in Engineering), Tholakele Ngubane (B Engineering Civil) and Chandre Gelant (B Engineering Industrial)



Dr Mohammed Bray, Dr Amy Adams, Dr Dorcas Maphanga, and Dr Ruary Thompson graduated with MBChB



Dr Claudia Ntsapi graduated with a PhD in Neurological physiology



Lynne-Mari Dietrich graduated with a degree in B Acc



TALENT DEVELOPMENT PROGRAMME (TDP)

The third phase of the Talent Development Programme (TDP) implemented by the Stellenbosch University Centre for Pedagogy (SUNCEP) in collaboration with all nine Provincial Departments of Education (DoE) and the Department of Science and Technology (DST) was completed in 2017. The

University Preparation: Talent Development Programme (TDP) 2018



programme provides challenging supplementary learning opportunities in Mathematics and Physical Sciences and foundational skills training for high achieving students. In the first year of the programme, a total of 547 selected Grade 11 and 12 learners participated in three holiday schools that were hosted at nine provincial TDP centres.

The second year of the TDP was characterised by the expansion and improvement of the programme at different levels. Each of the nine Provinces selected 40 Grade 11 and 40 Grade 12 learners, which resulted in double the number of learners in the four provincial centres that only hosted Grade 12's in 2017. This brought the total number of learners to 720 (with the percentage of girls having gone up from 52% to 54%... just short of the DST target of 60%). Tutor numbers also increased from 28 to 36 to due to the intake of Grade 11 learners in those provinces that only accommodate grade 12 in the previous year.





The year 2018 saw the introduction of a Critical friendship-strategy meant aimed at further enhancement of the content and pedagogical knowledge of those teachers who were recruited to become TDP tutors. Fourteen highly competent educators with excellent track-records visited tutors at provincial centres to observe, to give feedback and to jointly conceptualise strategies to address challenges identified during critical friendship post-observation conversations. The

feedback from the afore-mentioned engagements led to in-depth, critical discussion the annual directors meeting at the end of 2018, at the Critical Friendship reflection meeting, and at the annual Tutor Reflection meeting. Based on the enhanced understanding of the complexities of supplementary education it was decided to once again encourage the utilisation of technology in the classroom by expanding the ICT hub at each provincial centre through the provision of additional laptop computers and mobile data. These resources came in extremely handy to live-stream the Foundational skills initiative and for the processing of online university and bursary applications by learners. Most tutors also make use of online computer programs to enhance their classes.

The academic performance of the Grade 12 TDP learners was once again used as a key marker to determine the success of TDP. A total of 362 Grade 12 TDP learners wrote the 2018 National Senior Certificate exam and performed extremely well in both Mathematics and Physical Sciences. National averages of 80.13% in Mathematics and 82.3% in Physical Sciences were achieved. Furthermore, an average improvement of 5.9% in Physical Sciences marks from Grade 11 to 12 was reported and the average Mathematics marks remained unchanged from Grade 11 to Grade 12. Excellent academic results enabled a high percentage of the first cohort of TDP learners to be selected for STEM-based higher education courses and to be on their way to pursue careers in these fields.



Since the academic programme and learning materials of the TDP are aimed at empowering learners to attain high levels of competency in challenging subject matter, they are challenged to fulfil their full potential. Apart from the academic input, the TDP participants were also equipped with effective study methods and time management tools. The application of the knowledge and the foundational skills that the TDP learners have acquired during the holiday schools may have contributed to the achievement of the abovementioned results.



CORPORATE SERVICES (CS)

Corporate Services is the hub of SUNCEP. This component provides high level administrative, strategic, operational and information management support to the various components within SUNCEP as well as external stakeholders. Corporate Services aims to develop and maximise the capacity of SUNCEP's administrative, financial, physical and staff resources.





RESEARCH

SAARMSTE 2018

SUNCEP successfully hosted the 16th Annual Southern African Association of Research in Mathematics,

Sciences and Technology



(SAARMSTE) Research School at the Lord Charles Hotel in Somerset West from 19 to 22 June 2018. It was attended by 60 facilitators and participants from 10 different countries that included the South Africa, Zambia, Swaziland, Uganda, Namibia, Zimbabwe, Malawi, Brazil, Kenya and the UK.

Education

The research school attracted PhD students

and postdoctoral fellows from across the sub-region to support them in their doctoral and postdoctoral research efforts. A gala dinner which was hosted by SUNCEP was attended by Professor Kenneth Ngcoza, the President of SAARMSTE, with the Vice Rector (Research and Innovation), and Professor Eugene Cloete as the guest speaker. The event was also attended by Prof Christa van der Walt, the Vice Dean (Research) in the Faculty of Education and SUNCEP staff including the Director, Dr Trevor van Louw and the Deputy Director, Prof Mdu Ndlovu. From the feedback of the participants the 2018 SAARMTE Research School was a welcome learning experience.

The success of the event can be attributed to the hard work done by both the International and Local Organising Committees (LOC) with Prof Hamsa Venkatakrishnan at the helm. The LOC consisted of Prof Ndlovu, Pauline Hanekom, Paul van Vollenhoven and Dr. Cerenus Pfeiffer. Well done to the team!

2018 SUNCEP RESEARCH ACTIVITIES

Papers delivered

 Pfeiffer, C. & Ndlovu, M. (2018). Teaching and learning of function transformations in a GeoGebrafocused learning environment. In V. Gitirana, T. Miyakawa, M. Rafalska, S. Soury-Lavergne, L. Trouche (Eds.), Proceedings of the Re(s)sources 2018 International Conference. Re(s)sources 2018, May 2018 (pp. 324 – 327), Lyon, France.

Conference presentations

- Ayford, C & Pfeiffer, C. (2018). How to introduce functions. AMESA Western Cape regional conference at University of Western Cape (2018): How to introduce functions.
- E. Lourens. Presentation at the 27th EAN Annual Conference, The Hague University of Applied Sciences, The Hague, The Netherlands.6-8 June 2018. "From township to the workplace: a journey into and through higher education into the labour market"
- T. van Louw & R. Jeram. Presentation at the CCEAM International Conference, Malta 13-16 November 2018. "Practice-based professional learning: a SUNCEP approach to teacher education programmes."



2018 HIGHLIGHTS

DOCTORAL ACHIEVEMENTS



Dr Ramesh Jeram: SUNCEP Component Head for Research

PhD in Education Policy Studies (Practice based teacher professional learning).

Title of dissertation: On bridging the gap between theory and practice: A conceptual analysis of practice in relation to a teacher professional learning programme at Stellenbosch University.

Dr Christa Philander: SUNCEP Facilitator and Olifantsrivier Project Manager

PhD in Curriculum Studies (Teacher Communities of Practice).

Title of dissertation: The Professional Development of Natural Science Teachers: Possibilities of a Community of Practice.



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Prof DJ Malan (Dean, Faculty of Education and Chairperson)

Dr P Beets (WCED) Mr J Benjamin (WCED) Ms F Fredericks (Stellenbosch University) Ms N Landingwe-Mcoso Prof L Le Grange (Stellenbosch University) Prof N Davids (Stellenbosch University) Dr Trevor van Louw (Director: SUNCEP) Prof M Ndlovu (Deputy Director: SUNCEP)





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Karoo Jeugstigting MAD Leadership Foundation Mpact NCED Nedbank Eyethu Community Trust Nordex Education Trust Prima Bande Remgro **Riebeek Kelder** Rupert Onderwysstigting SATVI Stellenbosch University **Tip Trans Resources** Toyota SA **Trans Hex Operations** Tronox-Namakwa Sands WCED West Coast Resources All private funders