

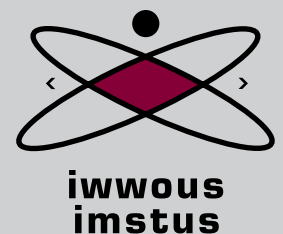
Instituut vir Wiskunde- en Wetenskaponderwys
Institute for Mathematics and Science Teaching

Universiteit • Stellenbosch • University

2012



Jaarverslag
Annual Report





Deur die HOOP Projek laat die US wetenskap vir Afrika werk

Die Universiteit Stellenbosch het 'n trotse tradisie van uitnemende onderrig en leer, navorsing van wêreldgehalte en aktiewe betrokkenheid by gemeenskappe. Met inagneming van hierdie bewese akademiese en navorsingskundigheid het ons doelbewus besluit om van ons navorsingsprogramme en akademiese inisiatiewe toe te spits op vyf temas waardeur die US 'n betekenisvolle bydrae tot die nasionale en internasionale ontwikkelingsagenda kan maak.

Hierdie inisiatiewe dien as voertuig vir innoverende onderrig en leer, vir die toepassing van nuwe kennis en om die grense van wetenskapgebaseerde gemeenskapsbetrokkenheid te versit. As bouers van hoop stel die US ons kundigheid tot diens van die samelewing. Ons noem dit die HOOP Projek, en in sy wese behels dit die soeke na volhoubare wetenskaplike oplossings vir Afrika se uitdagings vanuit die hoëronderwysfeer: van die voorsiening van gesogte gegradueerdes en navorsing van wêreldgehalte in moderne fasiliteite, tot die aanwending van bewese kundigheid om die vasteland se politieke, sosio-ekonomiese en omgewingsvraagstukke aan te pak.

Besoek www.diehoopprojek.co.za vir meer inligting.

SU applies science to Africa's toughest challenges

Stellenbosch University is recognised for its proud heritage of excellence in teaching and learning, world-class research and active involvement in communities. With due cognisance of this proven academic and research expertise we took a conscious decision to focus some of our research programmes and academic initiatives on five areas where the University can make the most significant contribution to the national and international development agenda by means of its array of academic initiatives.

These initiatives serve as vehicles for innovative teaching and learning, new knowledge applications and extending the boundaries of science-based community engagement. As builders of hope Stellenbosch University puts its expertise at the service of human need. This we call the HOPE Project, which in essence entails seeking sustainable scientific solutions to Africa's challenges from within the ambit of our higher education mandate: to consistently deliver sought after graduates and conduct world-class research in advanced facilities, and to utilise our proven expertise to address the continent's political, socio-economic and environmental issues.

Visit www.thehopeproject.co.za for more information.

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'n Elektroniese weergawe van hierdie Jaarverslag is ook op die webtuiste beskikbaar.

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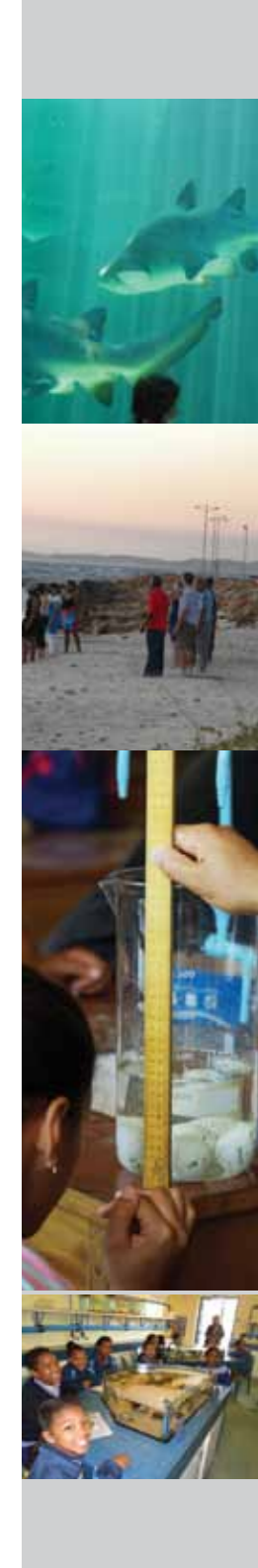
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The Institute for Mathematics and Science Teaching (IMSTUS) is part of the Faculty of Education at Stellenbosch University.

An electronic version of this Annual Report is also available on the website.

www.imstus.sun.ac.za

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Reflection on the past...

2012 was the last year of the Systemic Education and Extramural Development and Support (SEEDS) project, which was a major contributor towards sustained development and innovation at IMSTUS over the past years. We did our utmost to ensure sustainability and, where possible, continued involvement in all our projects.

Looking at the main projects funded by the SEEDS sponsorship, the SciMathUS Bridging Programme is in a position to spread its wings to a satellite campus in Worcester in 2013. The ACE in Mathematics, which was offered in a blended learning format, could unfortunately not be continued, although the experience of making use of e-learning and interactive telematics broadcasts will prove very valuable in future endeavours. In addition, The African Institute for Mathematical Sciences School Enrichment Centre (AIMSSEC), our partner in the ACE, was able to secure funding to continue its training programmes for in-service teachers. The SMILES schools intervention really made a significant impact on the participating schools, as is evident from the research reports based on this work. In addition, several other initiatives flowed from the experience gained through this initiative.

Although 2012 marked the end of a phase in the history of IMSTUS, it was also the beginning of an exciting new phase. The staff members of IMSTUS have proved themselves prepared and able to face the new challenges. They deserve the highest praise for their excellent work.

Terugblik...

2012 was die laaste jaar van die SEEDS-program, wat 'n belangrike bydrae gelewer het tot volgehoue ontwikkeling en innovering by IWWOUS oor die afgelope jare. Ons het ons bes gedoen om volhoubaarheid en die voortsetting van al ons projekte te verseker.

As ons kyk na die belangrikste projekte wat deur die SEEDS-borgskap befonds is, kan ons met trots wys op die SciMathUS-brugprogram, wat sy vlerke in 2013 kan spreid na 'n satelliet-kampus in Worcester. Die GOS in Wiskunde, wat 'n model van gemengde leer gevolg het, kon ongelukkig nie voortgesit word nie, hoewel die ondervinding wat ons daarmee opgedoen het, baie waardevol sal blyk in toekomstige opleidingsinisiatiewe. Wat meer is, het *The African Institute for Mathematical Sciences School Enrichment Centre (AIMSSEC)*, ons ven-noot in hierdie onderneming, daarin geslaag om fondse te bekom om met sy indiensopleidingsprogramme van onder-wysers voort te gaan. Die SMILES-skoleintervensie het 'n wesenlike impak gehad in die deelnemende skole, soos blyk uit navorsingsverslae gebaseer op hierdie werk. Verskeie ander inisiatiewe het ook voortgevloei uit die ervaring wat met hierdie inisiatief opgedoen is.

Hoewel 2012 dus die einde van 'n fase in IWWOUS se geskiedenis kenmerk, was dit ook die begin van 'n opwindende nuwe fase. Die personeel van IWWOUS het bewys dat hulle bekwaam en gereed is om die nuwe uitdagings die hoof te bied. Hulle verdien die hoogste lof vir hulle uitstekende werk.

Dr Kosie Smit

Dr Kosie Smit retired as Director of IMSTUS at the end of 2012 after a service stint spanning 18 years. Prior to joining IMSTUS, he was a senior lecturer in the Department of Mathematics at Stellenbosch University. Right from the outset as head of IMSTUS he showed leadership that demonstrated courage, vision and insight. He understood that South Africa faced challenges in the field of education.

It was his constant striving to bring better – and higher – education to those in the ranks of South Africa's impoverished populations and to those who had been deprived of opportunities to obtain a university education. He was a tireless worker who remained committed to his ideals with passion; an unassuming man, with a most disarming smile whose courage and humanity appealed to those who crossed his path. Kosie Smit's legacy to IMSTUS will always be remembered. We wish him a well-earned retirement.

In January 2013 IMSTUS and CELEMUS (the Centre for Education Leadership and Management of Stellenbosch University) were amalgamated to form a new centre and Dr Trevor van Louw, previously head of the latter, was appointed director. Details on the new centre will be communicated to all stakeholders soon.



Dr Kosie Smit



The road ahead...

The repositioning of IMSTUS and CELEMUS at the start of 2013, on the one hand, represented the end of an era, but on the other hand, the launch of a new and exciting era for teachers' professional learning, school intervention and preparation for university.

The rich experience acquired over the years by the staff members of these two institutions places the newly established Centre in a position whereby the continuation of existing programmes and the launching of new programmes can be undertaken with confidence, and it enables the proud history of these two institutions to achieve even greater heights. The excitement and confidence generated by this legacy have already become clearly evident in the brief time that the Centre has been operating in the ways in which the three main components of the Centre, mentioned above, are managed.

The scope of the teachers' professional learning and school intervention programmes has virtually doubled. These projects develop the capacities of teachers and learners in all seven districts of the Western Cape Education Department. In addition, the long-standing collaborative relationships of these two institutions with several education districts have been strengthened and new relationships established.

The value that the university preparation component adds to the lives of young people is already well known to officials at the education departments as well as to teachers and parents and to those learners who aspire to study at Stellenbosch University. Here too the offer has been extended. Two kinds of programmes are currently being presented: the preparation of current matriculants (known as the Hope@Maties Programme) and a bridging programme (SciMathUS) in which learners are supported in improving their matric results in core subjects to improve access to university admission. The contribution

that these two projects make to the achievement of Stellenbosch University's strategic diversity goals cannot be underestimated.

The new insights and knowledge generated by the Centre's involvement in education are supported and documented in a research component. We want to develop the profile of the new Centre on the foundations already laid, so that it may become a key role player in education nationally and internationally.

The activities of all three the components mentioned above are backed up by the effective administrative support from a very efficient administrative team.

With such significant projects and a highly motivated team, I look forward with gratitude and humility to leading the Centre into the future.

Die pad vorentoe...

Die herposisionering van IWWOUS en SELEBOUS (die Sentrum vir Leierskap en Onderwysbestuur aan US) aan die begin van 2013 het enersyds die einde van 'n era tot gevolg gehad, maar andersyds 'n nuwe, opwindende era vir Onderwyser Professionele Leer, Skoolintervensie en Universiteitsvoorbereiding ingelei.

Rype ervaring deur personelede van bovermelde instansies oor die jare, plaas die nuutgestigte sentrum in 'n posisie waar die voortsetting van bestaande programme en die loodsing van nuwe programme met vertroue aangepak kan word en waar die trotse geskiedenis van die twee instansies tot verdere hoogtes uitgebou kan word. Die opgewondenheid en vertroue wat deur die nalantenskap teweeggebring word, is in die kort leeftyd van die nuwe sentrum reeds duidelik sigbaar in die wyse waarop die drie hoofkomponente van die Sentrum, soos hier bo gemeld, bestuur word.

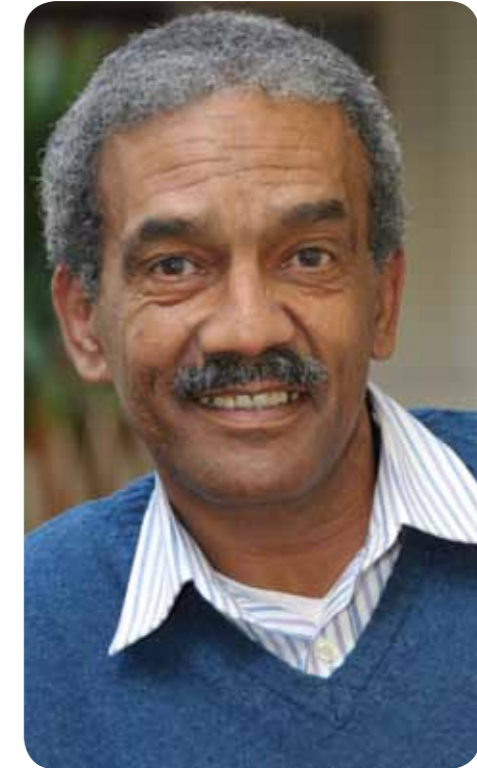
Die omvang van die Onderwyser Professionele Leer en Skool Intervensiekomponente het feitlik verdubbel. In hierdie projekte word onderwysers en leerders van al sewe distrikte van die Wes-Kaapse Onderwysdepartement se kapasiteit uitgebou. Verder word jarelange samewerkingsverhoudings van albei instansies met verskillende onderwysdistrikte verstewig, maar nuwe verhoudings word ook gevestig.

Die waarde wat die Universiteitsvoorbereidingskomponent tot die lewe van jongmense voeg, is reeds welbekend by die amptenary van onderwysdepartemente, asook by onderwysers, ouers en leerders wat aspireer om aan die Universiteit Stellenbosch te studeer. Ook hier is die aanbod vergroot. Programme van tweërlei aard word tans aangebied: die voorbereiding van huidige matrikulante (bekend as die Hope@Maties Program) en 'n oorbruggingsprogram (SciMathUS) waardeur leerders ondersteun word om hul matriekuitslae in kernvakke te verbeter om universiteitstoelating te verkry. Die bydrae wat dié twee projekte lewer tot die bereiking van die strategiese diversiteitsoogmerk van die Universiteit Stellenbosch kan geensins geringgeskat word nie.

Nuwe insigte en kennis wat weens die Sentrum se betrokkenheid by die onderwys gegeneer word, word ondervang en geboekstaaf deur 'n navorsingskomponent. Ons wil die profiel van die nuwe sentrum verder uitbou op die fondament wat reeds hiervoor gelê is sodat dit 'n nasionale en internasionale kern rolspeler in die onderwys kan word.

Die werksaamhede van al drie die gemelde komponente word gerugsteun deur effektiewe administratiewe ondersteuning van 'n hoogs bekwame administratiewe span.

Met betekenisvolle projekte en 'n hoogs gemotiveerde personeel sien ek daarna uit om in opregte dankbaarheid en nederigheid die nuwe sentrum die toekoms in te lei.



Dr Trevor van Louw



Achievements in 2012

School Intervention Programmes

School intervention programmes mostly involved both teachers and learners.

Training was also enhanced by classroom visits, assisting teachers with the implementation of the newly acquired content knowledge and didactic skills. IMSTUS staff interacted directly with learners during class teaching and out-of-school (afternoon) sessions. During these sessions learners received additional enrichment teaching and teachers were consequently also exposed to other ways of good practice teaching. In 2012 IMSTUS was mostly involved in schools in the Western Cape Province.

Between 2009 and 2012 the Embassy of the Kingdom of the Netherlands funded the Systemic Education and Extramural Development and Support (SEEDS) consortium to the tune of R150 million. The project was managed by Stellenbosch University, with IMSTUS providing financial and administrative support to the programme manager. IMSTUS was one of the nine partners in this consortium and received funding for:

- a school intervention programme (SMILES) for offering training to teachers and learners from Grades 4-12 in Numeracy, Mathematics, Mathematical Literacy, Natural Sciences, Physical Sciences and Life Sciences in 15 schools (10 primary and 5 high schools);
- the SciMathUS bridging programme; and
- the ACE in Mathematics.

SMILES (Sciences and Mathematics Initiative for Learners and Educators) schools intervention programme

The aims of the SMILES project were to improve learner involvement in classes; to improve teachers' content knowledge; to improve teachers' assessment abilities; to improve teachers' didactic skills; and to improve teachers' classroom management skills.

The project was formally and externally evaluated by a Dutch evaluation company after its completion. The evaluators found that "most SEEDS partners challenged schools to move towards a modern constructivist learner-centred and participatory teaching methodology or approach. This resulted in a significant increase of school performance as measured by the improved results over the period of implementation. This approach also appears to be more time efficient. It is recommended that this methodology be adopted across the schooling sector in South Africa."

Leadership in schools has been identified as a major issue for effective implementation of school interventions.

Some IMSTUS-specific comments from this report are:

- the comprehensive interventions by IMSTUS [are] very innovative, because they took the whole school and learning system into account;
- teacher-learner interaction is decisive for the quality of learning and overall school performances, with the "hardware" of infrastructure, including ICT, being supportive only;
- the Realistic Mathematics Education (RME) approach implemented by IMSTUS is congruent with constructivism in teaching and appears to be effective as it significantly improved learner performances in

Mathematics. It is recommended that this approach be mainstreamed; and

- SMILES high school teachers displayed significant improvement in their professionalism, both with regard to contents and constructivist teaching approaches (learner centred, problem based), also avoiding misconceptions and resulting in better performing learners.

CLIMMB (Curriculum, Literacy, Mathematics and Management Buzz)

During the same period that the SMILES project was offered, IMSTUS received funding from the DG Murray Trust to offer training in the Foundation Phase (Grades 1-3) in 10 primary schools.

The objective of this intervention was to improve the teaching and learning of Mathematics in the Foundation Phase by:

- enhancing the mathematical content knowledge and understanding of teachers;
- improving the teachers' mathematical knowledge for teaching; and
- improving the teachers' classroom management skills.

To achieve this, the initiative focused on:

- classroom visits to offer an on-the-spot advisory service;
- cluster workshops; and
- co-teaching.

Reflecting on this project, the facilitators and teachers reported that it takes time to build a relationship based on trust. It was only after 3 years of involvement that most of the teachers felt comfortable with the facilitators in their classes and could ask for assistance. Individual needs could therefore also be addressed. One very meaningful

way of illustrating this was when teachers had the confidence to actively co-teach with the facilitators.

The DG Murray Trust also funded the literacy training offered by BlendED (Pty) Ltd and the curriculum leadership and management training offered by CELEMUS (Centre for Leadership and Management at Stellenbosch University) in the same 15 schools. Both the SMILES and CLIMMB projects ended at the end of 2012.

Olifants River School Project

This project, offered to schools in the Vredendal area since 2001, has been funded by EXXARO-Namakwa Sands (now TRONOX-Namakwa Sands) and the 2bSmart Trust from its inception. The aim of this project has always been to enhance Mathematics and Sciences teaching in the Olifants River Valley.

Special focus was placed on the development of basic but fundamentally critical mathematics and science skills in a practical context. More than 900 learners and their teachers were involved in different activities during 2012.

WEN-WEN Project

Investec funded bi-weekly tuition sessions in Mathematics and Natural Sciences after school hours to 40 promising Grade 7 learners from primary schools around Stellenbosch. This project aims to assist learners to bridge the gap in these subjects between primary and high school.

As this project was in its second year in 2012, teachers were invited to co-present the learner sessions with the IMSTUS staff members. The teachers were also encouraged and invited to attend training sessions for Senior Phase teachers hosted by IMSTUS.



TEACH South Africa

TEACH South Africa recruits, trains and supports talented, recently qualified university graduates (known as ambassadors) to commit to teaching for a minimum of 2 years in some of South Africa's most disadvantaged schools.

IMSTUS supported 4 ambassadors during 2012 (3 at LEAP schools and one at Sinako High School). (LEAP provides education to students from Grades 9 to 12. It is a learning model that aims for excellence in Mathematics, Science and English – and so transforms disadvantaged young people's lives and the communities where they live).

The support programme for 2012 consisted of:

- 40 hours training on content and pedagogy during the year;
- Mathematics material for the learners, also with a Realistic Mathematics Education (RME) approach to be utilised in the classroom, enhancing a constructivist approach to teaching;
- support with hands-on activities; and
- classroom visits to observe the ambassadors while teaching, give them feedback, co-teach with them and assist with curriculum management and other practical subject and didactics issues.

Professional teacher development programmes

Since 1997 Stellenbosch University has offered the formal, subject-related SAQA-accredited Advanced Certificate in Education (ACE) for teachers to formally improve their professional development with a professional education qualification.

While the new professional development programmes for teachers are being put in place to be offered from 2015, short courses are offered as an alternative for teachers to improve their subject knowledge.

ACE courses

The only ACE course that was offered by IMSTUS in 2012 was the ACE in Mathematics. Together with the teachers who completed outstanding modules in Life Sciences and Mathematical Literacy, 32 teachers received ACE qualifications in the 2012 academic year. Congratulations to all of them.

The ACE in Mathematics was funded by The Embassy of the Kingdom of the Netherlands.

Short courses

Training in Senior Phase Mathematics and Natural Sciences were simultaneously conducted at the Cape Teaching and Leadership Institute in Kuils River from 16 July 2012 to 3 August 2012. The content for the training, in both the Mathematics and the Natural Sciences courses, was aligned to the current Curriculum Assessment Policy Statement (CAPS) for subjects. The courses delivered in Mathematics and Natural Sciences were registered as credit-bearing competency short courses accredited by Stellenbosch University.

In accordance with University regulations, the pass mark was 50%. Certificates of competence were issued to 54 participants in the Natural Sciences course and 48 in the Mathematics course.

During both courses the following aspects were observed:

- a noticeable increase in educators' confidence and self-esteem towards the end of the courses;
- a good team spirit and positive attitude amongst teachers in each class;
- group members supportive of one another and learning from peers, contributing to the success of the courses; and
- being away from school and other disturbances helped the teachers to stay focused on tasks and benefit optimally from course activities.

A collaborative spirit also prevailed between IMSTUS facilitators and the participating teachers.

The biggest challenge for Grade 10 Life Sciences teachers in 2012 was the implementation of a practical examination by the learners at the end of the year.

Forty-seven eager Grade 10 Life Sciences teachers from as far as Mthatha and Gauteng enrolled in this accredited short course, offered by Stellenbosch University at the Cape Teaching and Leadership Institute from 2 to 5 April 2012.

The co-operation received from the Managers at the Cape Teaching and Leadership Institute made our task as presenters easy. We look forward to future positive engagements with the Cape Teaching and Leadership Institute.

The Mathematics and Natural Sciences short courses were funded by the Western Cape Department of Education. The Life Sciences teachers funded their own tuition or were sponsored by their schools to attend the course.

Learner intervention programmes

In 2012 IMSTUS offered 2 programmes for learner interventions:

SciMathUS Bridging Programme

SciMathUS is a bridging programme at Stellenbosch University aimed at allowing students from educationally disadvantaged backgrounds a second opportunity to improve their Mathematics and Physical Sciences National Senior Certificate results.

If students choose the Mathematics and Accounting stream, they improve only their Mathematics marks as Accounting is taught and assessed by the Faculty of Economic and Management Sciences at the University. Once the students successfully complete the programme they may qualify to enrol in degree programmes of their choice.

All 107 students who rewrote the final exam in 2012 passed – 84 of them enrolled in different degree programmes at Stellenbosch University in 2013. Some students also chose to enrol at other higher education institutions.

Twenty-one former SciMathUS students graduated with various degrees at Stellenbosch University in the 2012 academic year.

The programme was funded by The Embassy of the Kingdom of the Netherlands, FASSET, Rand Merchant Bank, the Michael and Susan Dell Foundation, Remgro and private individuals.

EXPO FOR YOUNG SCIENTISTS

By training learners how to use the scientific method, they will know how to identify problems and analyse them, gather data or information, find solutions and communicate their findings.

Science expositions afford learners the opportunity to exhibit their scientific research projects, and to discuss them with knowledgeable judges and interested co-exhibitors.

In 2012:

- about 400 learners and 40 teachers attended 3 different training sessions on how to conduct research;



- the Stellenbosch Regional competition was hosted in August 2012; 351 learners from 34 schools (3 private, 7 urban and 12 rural) participated;
- 94 judges (university staff members and teachers from participating schools) adjudicated the 229 projects;
- 27 learners from 15 schools represented the Stellenbosch region at the National Expo in October 2012; 5 of them received golden medals, 10 silver and 5 bronze and 5 special category awards;
- 5 teachers from this region acted as judges at the national competition.

The activities of this region were funded by Eskom, Expo Head Office, Toyota SA Motors (Pty) Ltd, Het Jan Marais Nationale Fonds and Stellenbosch University.

Research

In 2012 IMSTUS continued its research process in its different programmes because it believes that innovation should be at the heart of all its endeavours.

Articles published or submitted

- Malan SB, Ndlovu M & Engelbrecht P. Introducing problem-based learning (PBL) into a Foundation Programme to develop self-directed learning skills. Submitted to the *South African Journal of Education*.
- Ndlovu MC. Revisiting the efficacy of constructivism as a mathematics learning theory. *Philosophy of Mathematics Education Journal, Volume 27, April 2013*.
- Ndlovu MC, Wessels DCJ & De Villiers MD (in press). An analysis of pre-service teacher competencies in a Sketchpad mediated geometry teaching environment. *African Journal for Research in Mathematics, Science and Technology Education*.
- Ndlovu MC & Mji A. 2012. The alignment between the South African mathematics assessment standards and the TIMSS assessment frameworks. *Pythagoras*, 33(3): 63-71.

- Ndlovu MC & Mji A. 2012. Pedagogical implications of students' misconceptions about deductive geometric proof. *Acta Academica*, 44(3):175-205.

Postgraduate studies by IMSTUS staff members

- Pauline Hanekom (MEd in Educational Psychology: support), Life Sciences facilitator – graduated in December 2012: *Finding an educational niche for our son with PDD: an auto-ethnography*.
- Jeram Ramesh (MPhil in Monitoring and Evaluation), facilitator: Mathematics – graduated in March 2013: *Interpreting the effects of collegiality and collaboration on mathematics teachers' efficacy in a school based professional development programme: a case study*.
- Anneke Müller (MEd in Educational Psychology: support), Fundraising and Marketing Manager – graduated in March 2013: *The predictive value of Grade 12 and university access tests results for success in higher education*.

Six staff members are currently enrolled in post degree studies, six postgraduate students are supervised by senior IMSTUS staff members and three staff members received FIRTLL (Fund for Innovation and Research into Teaching and Learning) scholarships.

Recent conferences attended by IMSTUS staff members

International conferences

- Ndlovu M & Mji A (July 2012). An analysis of the alignment between SA's Grade 8 Mathematics curriculum and TIMSS 2003 (poster), International Congress on Mathematical Education 2012, Seoul, South Korea.
- Hanekom PW & Daniels D (July 2012). Journeying unmapped routes to an educational niche for our son with Pervasive Developmental Delay (presentation), 30th International Congress of Psychology 2012, Cape Town, South Africa.

National and regional conferences

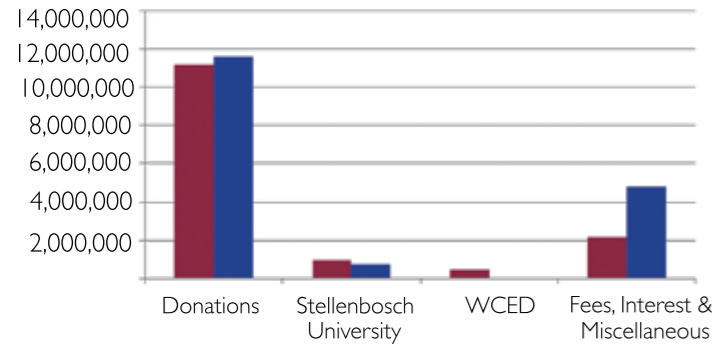
- Pfeiffer, CR (March 2012). Teaching of the theorem of Pythagoras with GeoGebra. The Cape Teaching and Leadership Institute (CTLI) Conference 2012. (Workshop) Worcester.
- Jeram, R (March 2012). The teaching of probability. The Cape Teaching and Leadership Institute (CTLI) Conference 2012 (workshop). Worcester.
- Müller A, Beyers E & Du Plessis A (April 2012). The Role of Grit, a Growth Mind-set and: "Get-better" Goals in Academic Success – A SciMathUS Case Study. Conference on Teaching and Learning, Stellenbosch University, Stellenbosch.
- Müller A & Van Wyk C (April 2012). Using quantitative methods to measure the impact of selected variables on student achievement in higher education. Conference on Teaching and Learning, Stellenbosch University, Stellenbosch.
- Ndlovu M (April 2012). An analysis of the alignment between SA's Grade 8 Mathematics curriculum and TIMSS 2003 Grade 8 Mathematics assessment frameworks. South African Basic Education Conference, Durban, RSA.
- Jeram, R (April 2012). Institutionalising change: Using Fullan's eight drivers of change as a theoretical framework for measuring change within teachers on a professional development project (poster). South African Basic Education Conference, Durban.
- Pfeiffer, CR (April 2012). Teaching of Euclidean Geometry with GeoGebra. GeoGebra Conference, Nelson Mandela Metropolitan University.

- Jeram R (June 2012). Solving simultaneous equations in context to illustrate the basics of mathematical modelling: FET phase focus (workshop). 18th Congress of AMESA, Potchefstroom.
- Pfeiffer, CR (June 2012). Teaching of the theorem of Pythagoras with GeoGebra & An introductory lesson to Trigonometry with GeoGebra. 18th Congress of AMESA, Potchefstroom.
- Pfeiffer CR (August 2012). Transformation Geometry with GeoGebra (workshop). Maths, Science & ICT in Education in Education Convention 2012. Johannesburg.
- Ndlovu M (September 2012). An analysis of pre-service teachers' understanding of geometric definitions and class inclusion (short paper). AMESA Western Cape Regional Conference, Cape Town.
- Jeram R (September 2012). Interpreting graphs: Senior Phase focus (workshop). AMESA Western Cape Regional Conference 2012, Cape Town.
- Pfeiffer CR (September 2012). Using GeoGebra free dynamic software for transformation geometry (workshop). AMESA Western Cape Regional Conference 2012, Cape Town.
- Tambara C (September 2012), Position, orientation and views (workshop). AMESA Western Cape Regional Conference 2012, Cape Town.
- Van Wyk, R (September 2012). Using concrete teaching aids to teach fractions and to incorporate measurement (workshop). AMESA Western Cape Regional Conference 2012, Cape Town.

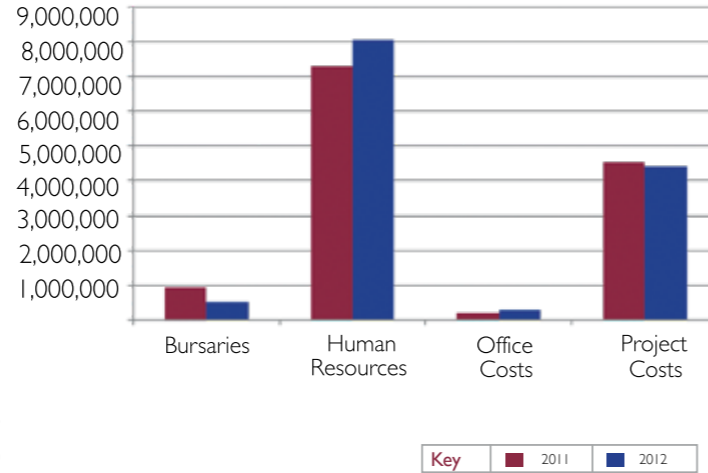


Finances

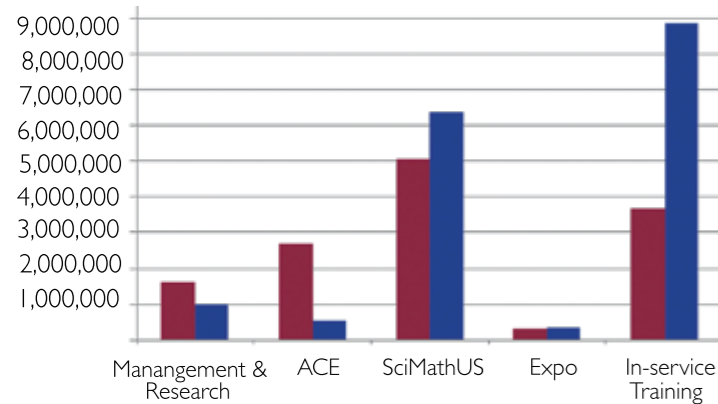
Income: 2011 and 2012



Expenditure 2011 and 2012



Allocation of income per category



IMSTUS Governing Body members

Prof Maureen Robinson (Chairperson)	Dean: Faculty of Education, Stellenbosch University (SU)
Dr Louise Botha	Lecturer: Department of Curriculum Studies, Faculty of Education, SU
Mr Tommy Botha	Principal Subject Advisor: Life Sciences, WCED
Dr Catharine Esterhuysen	Senior Lecturer: Department of Chemistry & Polymer Science, Faculty of Science, SU
Mr Willy Maliwa	Circuit Manager, Circuit 1, Cape Winelands, WCED
Ms Anneke Müller (Secretary)	Marketing Manager: IMSTUS
Dr Mdu Ndlovu	Deputy Director: IMSTUS
Mr Gary Powell	Representative: AMESA Western Cape
Prof Chris Reddy	Professor and Chair: Department of Curriculum Studies, Faculty of Education, SU
Dr Kosie Smit	Director: IMSTUS
Prof Valdon Smith	Professor, Department of Botany & Zoology, Faculty of Science, SU

IMSTUS staff members

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Dr Mdu Ndlovu
Mr Clifton Ayford

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Ms Marietjie Buys
Ms Jeanne Cilliers
Ms Renata Del Fava
Mr Morney Engelbrecht
Mr Andrew Fair

Ms Merle Festus
Ms Pauline Hanekom
Ms Erika Hoffman
Mr Ramesh Jeram
Ms Eva Kayser
Ms Nontyatyambo Kulati
Mr Stephan Kruger
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Ms Ané Malan
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Ms Mavis Mnyengeza
Ms Ingrid Mostert
Ms Anneke Müller
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Financial Officer (to June 2012)
Administrator: ACE programmes
Project Leader: SMILES Project; Subject Co-ordinator: Physical Sciences
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