

CURRICULUM VITAE

IN

RESPECT

OF

DR SAM RAMAILA

PhD [UJ], MSc [Wits], BSc Hons, BSc, HED [Unin], Extracurricular Certificate [UJ], Certificate (*Management*) [Quint-Essential Consulting Group, Cape Town], Certificate (*Microsoft PowerPoint*), Advanced Certificate (*Microsoft PowerPoint*) [Dynamix Computer Training Centre, Cape Town]

BIOGRAPHICAL INFORMATION

Surname	Ramaila
First names	Sam Mabune
Date of birth	5 January 1968
I.D. No.	6801056120087
Nationality	South African

ADDRESS DETAILS

Home Address	9 Naalدهout Avenue Heuweloord Centurion Pretoria
Postal Address	Box 634 Raslouw 0109
Work address	Department of Science and Technology Education Faculty of Education University of Johannesburg B Ring 430, Kingsway Avenue Auckland Park, Johannesburg, 2006 South Africa Tel: (011) 559 2615 Cell: 064 6566 387 / 073 464 1064 E-mail: samr@uj.ac.za

EDUCATION

PhD	University of Johannesburg
Title of Thesis	<i>Mentoring as a form of professional support for physical sciences teachers within a community of practice</i>
MSc	University of the Witwatersrand
Title of Dissertation	<i>The kinematic equations: An analysis of students' problem-solving skills</i>
BSc Hons (Physics)	University of the North
BSc (Mathematics, Physics and Chemistry)	University of the North
Higher Education Diploma (HED)	University of the North
Extracurricular Certificate	University of Johannesburg
Certificate (<i>Management</i>)	QuintEssential Consulting Group, Cape Town
Certificate (<i>Microsoft PowerPoint</i>)	Dynamix Computer Training Centre, Cape Town
Advanced Certificate (<i>Microsoft PowerPoint</i>)	Dynamix Computer Training Centre, Cape Town

AWARDS

- Fulbright Scholarship from the Education Aid Program (1991)
- Fulbright Scholarship from Kagiso Trust (1994)
- Merit Scholarship from the National Research Foundation (1995)
- Mathematics Excellence Award at the University of the North (now University of Limpopo) (1991)
- District Recognition Award for producing excellent Grade 12 Physical Science results at Lengama High School in Jane Furse, Limpopo Province (1990)
- Successfully managed the award winning *Teacher Professional Development Project* on behalf of the South African Institute of Physics

CAREER TRAJECTORY

2018 – Present

Senior Lecturer

Department of Science and Technology
Education
Faculty of Education
University of Johannesburg

Key responsibilities

- Teaching
- Research
- Administration
- Community engagement

2003 – 2018

Senior Lecturer

Department of Applied Physics and
Engineering Mathematics
Faculty of Science
University of Johannesburg

Key responsibilities

- Teaching
- Research
- Administration
- Coordination of departmental program reviews
- Community engagement

2016 - 2017

Acting Director: Soweto Science Centre
Faculty of Science
University of Johannesburg

Key responsibilities

- Managing the key activities of the Learner Intervention Program
- Managing the key activities of the Teacher Development Program
- Managing administrative staff members
- Managing facilitators involved with the Learner Intervention Program
- Managing facilitators involved with the Teacher Development Program
- Managing stakeholder relations
- Managing the Public Understanding and Awareness of Science Program
- Fundraising and marketing

2013-2014

Education Consultant (Part-time)
Department of Basic Education
Pretoria

Key responsibilities

- Development of mathematics diagnostic assessments
- Analysing learner performance in Annual National Assessments

2002-2003

Manager: Public Understanding and
Awareness of Science Division
The South African National Space Agency
(SANSA), Cape Town

Key responsibilities

- Managing Public Understanding and Awareness of Science Program
- Managing stakeholder relations
- Fundraising and marketing
- Conducting scientific research

1997-2002

Physics Lecturer
Physics Department
University of Limpopo

Key responsibilities

- Teaching
- Research
- Administration
- Community engagement

1989

Mathematics and Physical Science Teacher
Molomoatau High School
Masemola Village, Limpopo

1990

Mathematics and Physical Science Teacher
Lengama High School
Jane Furse, Limpopo

PROFESSIONAL AFFILIATION

- Member of the South African Institute of Physics (SAIP)
- Member of Council: South African Institute of Physics (SAIP) (2011-2017)
- Chairperson: Physics Education Division, South African Institute of Physics (SAIP)

MILESTONES ACHIEVED

- Successfully managed the *Review of Undergraduate Physics Education in Public Higher Education Institutions in South Africa Project* on behalf of the South African Institute of Physics (SAIP) in collaboration with the Council on Higher Education (CHE)
- Successfully managed the crafting of the *South African Institute of Physics Strategic Plan on the Enhancement of Physics Training in South Africa*
- Successfully forged a collaborative partnership on teacher professional development involving South African Institute of Physics and other key stakeholders such as the University of Johannesburg, Institute of Physics (UK), British High Commission and the Gauteng Department of Education
- Facilitated a *Memorandum of Agreement* involving the University of Johannesburg, South African Institute of Physics and Institute of Physics (UK)
- Successfully managed the award winning *Teacher Development Project* on behalf of the South African Institute of Physics (SAIP)
- Provided leadership by managing key functions and activities of the Physics Education Division, South African Institute of Physics (SAIP)
- Provided leadership by managing key functions and activities of the Council Education Committee, South African Institute of Physics (SAIP)
- Provided leadership by managing key functions and activities of the *South African Physics Olympiad* as an initiative of the South African Institute of Physics (SAIP)
- Leveraged funding from the British High Commission (R450 000) for the *Teacher Development Project*

- Leveraged funding from the British High Commission (R80 000) for the *Teacher Development Project*
- Leveraged funding from the National Science and Technology Forum (R30 000) for the *Teacher Development Project*
- Leveraged funding from the South African Agency for Science and Technology Advancement (R30 000) for the enhanced coordination of the *South African Physics Olympiad*
- Leveraged funding (R200 000) for the Soweto Science Centre from ANGLOGOLDASHANTI to purchase laboratory equipment
- Leveraged funding (R200 000) for the Soweto Science Centre from ANGLOGOLDASHANTI for teacher and learner material.
- Leveraged funding ((R300 000) for the Soweto Science Centre from the South African Agency for Science and Technology Advancement for teacher and learner material.
- Leveraged funding from the South African Agency for Science and Technology Advancement (R500 000) for the enhanced coordination of the activities of the Soweto Science Centre.
- Leveraged funding from the South African Agency for Science and Technology Advancement (R125 000) for the coordination of the National Science Week 2017 activities at the Soweto Science Centre.
- Leveraged funding (R26 000) from the National Research Foundation for attendance of ICSU related *2017 International Conference on Education and New Developments* in Lisbon, Portugal.
- Facilitated the staging of the historic *Teacher Professional Development Workshop* featuring renowned international presenters such as Prof Rhett Allain (South-Eastern Louisiana State University, USA), Prof Eugenia Etkina (Rutgers University, USA) and Prof David Wolfe (Institute of Physics, UK) as part of the 2016 South African Institute of Physics Annual Conference hosted by the University of Cape Town.

INVOLVEMENT IN INTERNATIONAL COMMITTEES

- Member of the International Scientific Committee of the International Conference on Education and New Developments
- Member of the International Programme Committee of the International Conference on Physics Education

KEY ATTRIBUTES

- Strategic management skills
- Project management skills
- People management skills
- Report writing, monitoring and evaluation skills
- Financial management skills
- Problem solving skills
- Excellent communication skills
- Good analytical skills
- Attention to detail
- Good listening skills
- Excellent time management skills
- Ability to work under pressure
- Good interpersonal and networking skills
- Excellent planning and organising skills
- Results-oriented
- Goal-directed

PAPERS PRESENTED AT NATIONAL CONFERENCES

- Sam Ramaila & Leelakrishna Reddy (2017). Assessment of first year physics practical work using software-assisted computer-based technology system. South African Institute of Physics Conference, University of Stellenbosch, Western Cape, South Africa.
- Sam Ramaila & Leelakrishna Reddy (2017). First year university physics students' perceptions of teaching methods. South African Institute of Physics Conference, University of Stellenbosch, Western Cape, South Africa.
- Sam Ramaila & Leelakrishna Reddy (2017). First year university physics students' understanding of units and measurements. South African Institute of Physics Conference, University of Stellenbosch, Western Cape, South Africa.
- Sam Ramaila & Leelakrishna Reddy (2017). Soweto Science Centre as a flagship community engagement initiative. South African Institute of Physics Conference, University of Stellenbosch, Western Cape, South Africa.
- Sam Ramaila & Umesh Ramnarain (2016). University science students' self-efficacy – A case of physics learning. South African Institute of Physics Conference, University of Cape Town, Cape Town, South Africa.
- Sam Ramaila & Umesh Ramnarain (2016). Self-efficacy beliefs of physical science teachers. South African Institute of Physics Conference, University of Cape Town, Cape Town, South Africa.
- Sam Ramaila & Umesh Ramnarain (2016). University physics students' perceptions of teaching methods. South African Institute of Physics Conference, University of Cape Town, Cape Town, South Africa.
- Sam Ramaila & Umesh Ramnarain (2016). The pedagogical orientation of 4th year BEd students in teaching physics. South African Institute of Physics Conference, University of Cape Town, Cape Town, South Africa.

- Sam Ramaila & Umesh Ramnarain (2015). University physics students' views about scientific inquiry. South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.
- Sam Ramaila & Umesh Ramnarain (2015). Exploring teachers' baseline knowledge of mechanics. South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.
- Sam Ramaila, Leelakrishna Reddy & Padmanabhan Nair (2015). Global competitiveness as a barometer of scientific endeavour. South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.
- Sam Ramaila, Leelakrishna Reddy & Padmanabhan Nair (2015). Exploring teaching-learning activity in large class groups. South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.
- Sam Ramaila, Leelakrishna Reddy & Padmanabhan Nair (2015). Quality vs Quantity: the National Senior Certificate - A case study. South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.
- Leelakrishna Reddy, Jan Oelofse, Padmanabhan Nair & Sam Ramaila (2015). Does proficiency in units and measurements contribute towards success in first year university physics? South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.

- Leelakrishna Reddy, Padmanabhan Nair, Sam Ramaila & Jan Oelofse (2015). Assessment of Physics practicals using a software-embedded and improvisation based scientifically efficient system. South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.
- Padmanabhan Nair, Leelakrishna Reddy, Sam Ramaila, Themba Mathe & Azwinndini Muronga (2015). Soweto Science Centre as a flagship community engagement initiative at the University of Johannesburg. South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.
- Jesman Changundega, Sam Ramaila, Padmanabhan Nair & Leelakrishna Reddy (2015). A comparative study of the preparedness for undergraduate studies of students entering the university with South African matriculation examination results and Zimbabwe ZIMSEC examination results. South African Institute of Physics Conference, Nelson Mandela Metropolitan University and Rhodes University, Port Elizabeth, South Africa.
- Sam Ramaila & Umesh Ramnarain (2014). A CHAT perspective on the tensions and dynamics in the professional development of Physical Sciences teachers in a mentoring relationship. South African Institute of Physics Conference, University of Johannesburg, Johannesburg, South Africa.
- Sam Ramaila & Umesh Ramnarain (2014). First year university physics students' perceptions of the teaching-learning environment: In search of a coherent pedagogic learning orientation. South African Institute of Physics Conference, University of Johannesburg, Johannesburg, South Africa.
- Sam Ramaila & Umesh Ramnarain (2014). Lesson planning perceptions and experiences of South African Physical Sciences teachers in a new curriculum. South African Institute of Physics Conference, University of Johannesburg, Johannesburg, South Africa.

- Sam Ramaila & Leelakrishna Reddy, Padmanabhan Nair, Suzan Bvumbi (2014). Students' perceptions of the study process. South African Institute of Physics Conference, University of Johannesburg, Johannesburg, South Africa.
- Leelakrishna Reddy, Sam Ramaila & Padmanabhan Nair (2014). A critical assessment of first year entering university science students' conceptual understanding. South African Institute of Physics Conference, University of Johannesburg, Johannesburg, South Africa.
- Padmanabhan Nair, Leelakrishna Reddy, Sam Ramaila & Azwinndini Muronga (2014). The impact of community engagement initiative at Soweto Science Centre of the University of Johannesburg in addressing the subject knowledge deficiency of learners in the Further Education and Training band. South African Institute of Physics Conference, University of Johannesburg, Johannesburg, South Africa.
- Leelakrishna Reddy, Padmanabhan Nair & Sam Ramaila (2014). A triggering strategy for improved pass rate in a software-managed evaluation in Physics practicals for Engineering Programmes at the University of Johannesburg. South African Institute of Physics Conference, University of Johannesburg, Johannesburg, South Africa.
- Sam Ramaila, Leelakrishna Reddy & Padmanabhan Nair (2013). The barometer of scientific endeavour: A comparative analysis. South African Institute of Physics Conference, University of Zululand, Richards Bay, South Africa.
- Jan Oelofse, Padmanabhan Nair, Sam Ramaila & Leelakrishna Reddy (2013). Competency in units and measurement: Does it provide a good indicator of the performance of students in university first year Physics? South African Institute of Physics Conference, University of Zululand, Richards Bay, South Africa.

- Padmanabhan Nair, Jan Oelofse, Sam Ramaila & Leelakrishna Reddy (2013). A scientifically efficient approach for uniform evaluation of Physics practicals using software embedded and improvisation-based system at Doornfontein Campus of the University of Johannesburg. South African Institute of Physics Conference, University of Zululand, Richards Bay, South Africa.
- Sam Ramaila, Padmanabhan Nair & Leelakrishna Reddy (2012). Curriculum reform – Does it provide the divide between developed and developing countries? South African Institute of Physics Conference, University of Pretoria, Pretoria, South Africa.
- Sam Ramaila, Padmanabhan Nair & Leelakrishna Reddy (2012). Exploring large group dynamics. South African Institute of Physics Conference, University of Pretoria, Pretoria, South Africa.
- Sam Ramaila, Padmanabhan Nair & Leelakrishna Reddy (2012). National Senior Certificate results: Steady improvement versus output quality. South African Institute of Physics Conference, University of Pretoria, Pretoria, South Africa.
- Sam Ramaila, Padmanabhan Nair & Leelakrishna Reddy (2011). National Curriculum Statement achievement levels – Can they serve as a measure of science students' preparedness for university study? South African Institute of Physics Conference, University of South Africa, Pretoria, South Africa.
- Sam Ramaila, Padmanabhan Nair & Leelakrishna Reddy (2011). Lightning – Scientific knowledge versus mythological beliefs. South African Institute of Physics Conference, University of South Africa, Pretoria, South Africa.
- Sam Ramaila, Padmanabhan Nair & Umesh Ramnarain (2010). Teachers working as communities of practice – Is it a viable alternative or a flat spare tyre? South African Institute of Physics Conference, Council for the Scientific and Industrial Research (CSIR), Pretoria, South Africa.

- Sam Ramaila & Padmanabhan Nair (2009). Science-fix Programme versus Advanced Certificate in Education Programme at the University of Johannesburg – Are these programmes a panacea to the complexities of the Physical Sciences National Curriculum Statement? South African Institute of Physics Conference, University of KwaZulu-Natal, Durban, South Africa.
- Sam Ramaila & Padmanabhan Nair (2008). An investigation of the teachers' challenges, needs and strategies posed by the implementation of the National Curriculum Statement. South African Institute of Physics Conference, University of Limpopo, Polokwane, South Africa.
- Sam Ramaila, Padmanabhan Nair & Jan Oelofse (2006). A scientifically efficient approach to uniform evaluation of physics practicals. South African Institute of Physics Conference, University of the Western Cape, Cape Town, South Africa.
- Padmanabhan Nair, Sam Ramaila & Sthembiso Mpungose (2006) An investigation of the learner performance at first year university physics courses in relation to their entry-level characteristics. South African Institute of Physics Conference, University of the Western Cape, Cape Town, South Africa.
- Sam Ramaila, Padmanabhan Nair & Leelakrishna Reddy (2005). Meddling with misconceptions. South African Institute of Physics Conference, University of Pretoria, Pretoria, South Africa.
- Padmanabhan Nair, Leelakrishna Reddy & Sam Ramaila (2004). Making sense of the high failure and dropout rates at South African Higher Education institutions. South African Institute of Physics Conference, University of Free State, Bloemfontein, South Africa.
- Padmanabhan Nair, Sam Ramaila, Leelakrishna Reddy & Jan Oelofse, Andrew Forbes (2004). Laser beam shaping. South African Institute of Physics Conference, University of Free State, Bloemfontein, South Africa.

- Padmanabhan Nair, Jan Oelofse, Leelakrishna Reddy & Sam Ramaila (2003). Laser automated fingerprint identification: Optical transmission and reflection interference methods. Technikon Witwatersrand Research Symposium, Johannesburg, South Africa.

PAPERS PRESENTED AT INTERNATIONAL CONFERENCES

- Sam Ramaila, Philemon Seloane & Lydia Mavuru (2019). Extended curriculum programs as a support mechanism to enhance South African undergraduate science students' academic performance in mathematics. International Conference on Education and New Developments, Porto, Portugal.
- Sam Ramaila, Philemon Seloane & Lydia Mavuru (2019). Exploring the impact of the complexity of cognitive demands associated with curriculum content on student academic performance: A case of mathematics. International Conference on Education and New Developments, Porto, Portugal.
- Sam Ramaila & Lydia Mavuru (2019). Assessing South African at-risk undergraduate engineering students' attitude towards mathematics. International Conference on Education and New Developments, Porto, Portugal.
- Sam Ramaila & Lydia Mavuru (2019). South African undergraduate engineering students' attitudes towards mathematics as a key knowledge domain: A comparative analysis. International Conference on Education and New Developments, Porto, Portugal.
- Sam Ramaila & Leelakrishna Reddy (2019). Assessing South African science students' attitudes towards physics laboratory environment. The 13th Annual International Technology, Education and Development Conference, Valencia, Spain.

- Sam Ramaila (2019). Assessing South African undergraduate engineering students' attitudes towards mathematics as a fundamental discipline. The 13th Annual International Technology, Education and Development Conference, Valencia, Spain.
- Lydia Mavuru & Sam Ramaila (2019). Integration of learners' socio-cultural experiences in Life Sciences classrooms: Do learners approve? The 11th Annual International Conference on Education and New Learning Technologies, Palma, Mallorca, Spain.
- Sam Ramaila & Philemon Seloane (2018). Academic performance of South African undergraduate engineering students in mathematics – A comparative analysis. The 11th Annual International Conference of Education, Research and Innovation, Seville, Spain.
- Sam Ramaila & Philemon Seloane (2018). South African undergraduate engineering students' understanding of complex numbers. The 11th Annual International Conference of Education, Research and Innovation, Seville, Spain.
- Sam Ramaila & Leelakrishna Reddy (2018). The impact of computer-based technology system on the assessment of physics practical work. The 12th Annual International Technology, Education and Development Conference, Valencia, Spain.
- Sam Ramaila & Leelakrishna Reddy (2018). Perceptions of South African first year physics students on the efficacy of laboratory practical work. International Conference on Education and New Developments, Budapest, Hungary.
- Sam Ramaila & Leelakrishna Reddy (2018). South African science students' self-efficacy beliefs – A case of physics learning. International Conference on Education and New Developments, Budapest, Hungary.

- Sam Ramaila & Umesh Ramnarain (2018). Assessment of physics practical work using innovative computer-based technology system. International Conference on Education and New Developments, Budapest, Hungary.
- Sam Ramaila & Leelakrishna Reddy (2018). Academic performance as an indicator of students' preparedness for university study: A case of physics. International Conference on Education and New Developments, Budapest, Hungary.
- Sam Ramaila & Leelakrishna Reddy (2018). Fostering adequate academic performance through extended curriculum programs. The 10th Annual International Conference on Education and New Learning Technologies, Palma, Mallorca, Spain.
- Sam Ramaila & Leelakrishna Reddy (2018). In-service teachers' challenges associated with the implementation of the Curriculum and Assessment Policy Statement in South Africa. The 10th Annual International Conference on Education and New Learning Technologies, Palma, Mallorca, Spain.
- Sam Ramaila & Umesh Ramnarain (2018). Demystifying teacher professional development in a mentoring relationship – A CHAT perspective. International Conference on Self-Directed Learning, North-West University, Potchefstroom, North-West Province, South Africa.
- Sam Ramaila (2018). A comparative analysis of school physics curriculum content in selected countries. International Conference on Physics Education, Johannesburg, Gauteng Province, South Africa.
- Sam Ramaila & Leelakrishna Reddy (2018). South African science students' perceptions of physics as a fundamental discipline. International Conference on Physics Education, Johannesburg, Gauteng Province, South Africa.

- Sam Ramaila & Umesh Ramnarain (2017). Exploring in-service teachers' baseline knowledge of mechanics. The 10th Annual International Conference of Education, Research and Innovation, Seville, Spain.
- Sam Ramaila & Umesh Ramnarain (2017). The pedagogical orientation of pre-service teachers in teaching physics. International Conference on Education and New Developments, Lisbon, Portugal.
- Sam Ramaila & Umesh Ramnarain (2017). University physics students' views about scientific inquiry. International Conference on Education and New Developments, Lisbon, Portugal.
- Sam Ramaila, Leelakrishna Reddy & Padmanabhan Nair, (2013). A critical analysis of the learner performance in mathematics and science education in selected group of countries. ISTE International Conference on Mathematics, Science and Technology Education, Kruger National Park, Mopani Camp, Phalaborwa, Limpopo, South Africa.
- Umesh Ramnarain & Sam Ramaila (2012). Mentoring as a form of professional support for South African physics teachers. World Conference on Physics Education, Bahçeşehir Üniversitesi, Istanbul, Turkey.
- Umesh Ramnarain & Sam Ramaila (2012). Mentoring of Physical Sciences teachers within a community of practice. South African Association of Research in Mathematics, Science and Technology Education (SAARMSTE), University of Malawi, Lilongwe, Malawi.
- Sam Ramaila, Padmanabhan Nair & Leelakrishna Reddy (2005). Complexity in student achievement when handicapped with misconceptions. Third Conference on Complexity Science and Educational Research, Louisiana State University, Louisiana, United States of America (USA).

- Padmanabhan Nair, Leelakrishna Reddy & Sam Ramaila (2005). Making sense of the high failure and dropout rates at South African higher education institutions. Third Conference on Complexity Science and Educational Research, Louisiana State University, Louisiana, United States of America (USA).

INVITED PRESENTATIONS

- Sam Ramaila (2018). Contextual review, assessment of impact and advice on the way forward. First Biennial African Conference on Fundamental Physics and Applications, Namibia University of Science and Technology, Windhoek, Namibia.
- Sam Ramaila (2016). Self-efficacy – An intellectual odyssey. Public Lecture presented at the University of Johannesburg, Johannesburg, South Africa.
- Sam Ramaila (2014). Enhancing teacher professional development – Breaking down barriers. Gauteng Department of Education Mathematics, Science and Technology Conference, Mondeor High School, Johannesburg, South Africa.
- Sam Ramaila (2013). Learner performance in mathematics and science education: A critical review. Gauteng Department of Education Mathematics, Science and Technology Conference, Mondeor High School, Johannesburg, South Africa.

PUBLICATIONS

- Sam Ramaila & Umesh Ramnarain (2019). Affordances of mentoring as a means to enhance self-directed learning. *Journal for New Generation Sciences*. Accepted
- Sam Ramaila (2019). A comparative analysis of school physics curriculum content in selected countries. *Journal of Physics: Conference Series*. Accepted
- Sam Ramaila & Leelakrishna Reddy (2019). South African science students' perceptions of physics as a fundamental discipline. *Journal of Physics: Conference Series*. Accepted
- Sam Ramaila & Leelakrishna Reddy (2019). Assessing South African science students' attitudes towards physics laboratory environment. Proceedings of the 13th Annual International Technology, Education and Development Conference, Valencia, Spain, pp. 300-303. ISSN: 2340-1079. ISBN: 978-84-09-08619-1
- Sam Ramaila (2019). Assessing South African undergraduate engineering students' attitudes towards mathematics as a fundamental discipline. Proceedings of the 13th Annual International Technology, Education and Development Conference, Valencia, Spain, pp. 296-299. ISSN: 2340-1079. ISBN: 978-84-09-08619-1
- Sam Ramaila, Philemon Seloane & Lydia Mavuru (2019). Extended curriculum programs as a support mechanism to enhance South African undergraduate science students' academic performance in mathematics. Proceedings of the International Conference on Education and New Developments, Porto, Portugal. Accepted

- Sam Ramaila, Philemon Selokane & Lydia Mavuru (2019). Exploring the impact of the complexity of cognitive demands associated with curriculum content on student academic performance: A case of mathematics. Proceedings of the International Conference on Education and New Developments, Porto, Portugal. Accepted
- Lydia Mavuru & Sam Ramaila (2019). Integration of learners' socio-cultural experiences in Life Sciences classrooms: Do learners approve? The 11th Annual International Conference on Education and New Learning Technologies, Palma, Mallorca, Spain. Accepted
- Umesh Ramnarain & Sam Ramaila (2018). The relationship between chemistry self-efficacy of South African first year university students and their academic performance. *Chemistry Education Research and Practice*, **19**(1), 60-67.
- Sam Ramaila & Leelakrishna Reddy (2018). The impact of computer-based technology system on the assessment of physics practical work. Proceedings of the 12th Annual International Technology, Education and Development Conference, Valencia, Spain, pp. 3773-3778. ISSN: 2340-1079. ISBN: 978-84-697-9480-7.
- Sam Ramaila & Leelakrishna Reddy (2018). Perceptions of South African first year physics students on the efficacy of laboratory practical work. Proceedings of the International Conference on Education and New Developments, Budapest, Hungary, pp. 495-498. ISSN: 2184-044X. ISBN: 978-989-99864-8-0
- Sam Ramaila & Leelakrishna Reddy (2018). South African science students' self-efficacy beliefs – A case of physics learning. Proceedings of the International Conference on Education and New Developments, Budapest, Hungary, pp. 502-505. ISSN: 2184-044X. ISBN: 978-989-99864-8-0

- Sam Ramaila & Umesh Ramnarain (2018). Assessment of physics practical work using innovative computer-based technology system. Proceedings of the International Conference on Education and New Developments, Budapest, Hungary, pp. 528-531. ISSN: 2184-044X. ISBN: 978-989-99864-8-0
- Sam Ramaila & Leelakrishna Reddy (2018). Academic performance as an indicator of students' preparedness for university study: A case of physics. Proceedings of the International Conference on Education and New Developments, Budapest, Hungary, pp. 537-541. ISSN: 2184-044X. ISBN: 978-989-99864-8-0
- Sam Ramaila & Leelakrishna Reddy (2018). Fostering adequate academic performance through extended curriculum programs. Proceedings of the 10th Annual International Conference on Education and New Learning Technologies, Palma, Mallorca, Spain, pp. 2472-2476. ISSN: 2340-1117. ISBN: 978-84-09-02709-5.
- Sam Ramaila & Leelakrishna Reddy (2018). In-service teachers' challenges associated with the implementation of the Curriculum and Assessment Policy Statement in South Africa. Proceedings of the 10th Annual International Conference on Education and New Learning Technologies, Palma, Mallorca, Spain, pp. 2466-2471. ISSN: 2340-1117. ISBN: 978-84-09-02709-5.
- Sam Ramaila & Philemon Seloane (2018). Academic performance of South African undergraduate engineering students in mathematics: A comparative analysis. Proceedings of the 11th Annual International Conference of Education, Research and Innovation, Seville, Spain, pp. 6008-6016. ISSN: 2340-1095. ISBN: 978-84-09-05948-5
- Sam Ramaila & Philemon Seloane (2018). South African undergraduate engineering students' understanding of complex numbers. Proceedings of the 11th Annual International Conference of Education, Research and Innovation, Seville, Spain, pp. 6106-6109. ISSN: 2340-1095. ISBN: 978-84-09-05948-5

- Sam Ramaila & Leelakrishna Reddy (2018). First year university physics students' perceptions of teaching methods. Proceedings of SAIP2017, the 62nd Annual Conference of the South African Institute of Physics, edited by Prof Japie Engelbrecht (SU/2017), pp. 294 - 299. ISBN: 978-0-620-82077-6.
- Sam Ramaila & Leelakrishna Reddy (2018). Soweto Science Centre as a flagship community engagement initiative. Proceedings of SAIP2017, the 62nd Annual Conference of the South African Institute of Physics, edited by Prof Japie Engelbrecht (SU/2017), pp. 300 - 305. ISBN: 978-0-620-82077-6.
- Sam Ramaila & Leelakrishna Reddy (2018). First year university physics students' understanding of units and measurements. Proceedings of SAIP2017, the 62nd Annual Conference of the South African Institute of Physics, edited by Prof Japie Engelbrecht (SU/2017), pp. 289 - 293. ISBN: 978-0-620-82077-6.
- Sam Ramaila & Umesh Ramnarain (2017). The pedagogical orientation of pre-service teachers in teaching physics. Proceedings of the International Conference on Education and New Developments, Lisbon, Portugal, pp. 388-391. ISSN: 2184-044X. ISBN: 978-989-99864-3-5.
- Sam Ramaila & Umesh Ramnarain (2017). University physics students' views about scientific inquiry. Proceedings of the International Conference on Education and New Developments, Lisbon, Portugal, pp. 397-400. ISSN: 2184-044X. ISBN: 978-989-99864-3-5.
- Sam Ramaila & Umesh Ramnarain (2017). Exploring in-service teachers' baseline knowledge of mechanics. Proceedings of the 10th Annual International Conference of Education, Research and Innovation, Seville, Spain. pp. 3445-3449. ISSN: 2340-1095. ISBN: 978-84-697-6957-7.
- Umesh Ramnarain & Sam Ramaila (2016). The achievement goals orientation of South African first year university physics students. *International Journal of Science and Mathematics Education*, **14**(1), 81-105.

- Sam Ramaila, Simon Connell, Rehana Vally, Igle Gledhill & Brian Masara (2015). *Strategic Plan on the Enhancement of Physics Training in South Africa*. South African Institute of Physics.
- Sashnee Moodley, Sam Ramaila & Igle Gledhill (2014). Poor maths, science education at heart of SA skills problem. *Creamer Media's Engineering News*, 27 June 2014.
- Sam Ramaila & Umesh Ramnarain (2014). Lesson planning perceptions and experiences of South African Physical Sciences teachers in a new curriculum. Proceedings of SAIP2014, the 59th Annual Conference of the South African Institute of Physics, edited by Chris Engelbrecht and Steven Karataglidis (University of Johannesburg, 2014), pp. 449 - 454. ISBN: 978-0-620-65391-6.
- Sam Ramaila & Umesh Ramnarain (2014). A CHAT perspective on the tensions and dynamics in the professional development of Physical Sciences teachers in a mentoring relationship. Proceedings of SAIP2014, the 59th Annual Conference of the South African Institute of Physics, edited by Chris Engelbrecht and Steven Karataglidis (University of Johannesburg, 2014), pp. 436 - 441. ISBN: 978-0-620-65391-6.
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PROFESSIONAL ACTIVITIES

Postgraduate Supervision

Master’s Students

James Mphafudi

The use of computer simulations as an intervention to remedy acid-base misconceptions of South African Grade 11 physical sciences learners in township schools (University of Johannesburg)

Themba Masilela *The representation of the nature of science in South African Grade 12 Life Sciences textbooks*
(University of Johannesburg)

Rosemary Zunga *South African Grade 11 Physical Sciences learners' perceptions of scientific inquiry*
(University of Johannesburg)

Rethabile Mokobori *Promoting South African Grade 11 Life Sciences learners' attitudes towards socio-scientific issues*

Served as Doctoral Committee Member in respect of the following PhD students

Lydia Mavuru (Completed) *Exploring the role of contextual knowledge in the pedagogical content knowledge of Grade 9 natural sciences teachers: A case study of township teachers in South Africa* (University of Johannesburg)

Clive Rudzirai (Completed) *Enhancing the pedagogical practice of South African physical sciences teachers in inquiry-based teaching through empowerment evaluation*

Sumayya Moosa *The professional development of physical sciences teachers' TPACK* (University of Johannesburg)

Dumile Moyo *The development of Physical sciences teachers' pedagogical content knowledge in the integration of indigenous knowledge and science teaching through inquiry based professional development*
(University of Johannesburg)

Manzini Hlatshwayo *Using learning progression for the particle model of matter as a scaffold for teachers in enacting classroom level formative assessment practices*
(University of Johannesburg)

Tarisai Chanetsa *Textbook analysis as a form of science teacher PCK development in the teaching of the nature of science*
(University of Johannesburg)

Professional role as External Examiner

Master's dissertations examined

R.M. Modiba *Compliance to radiation safety standards by radiographers and dental professionals in Waterberg district hospitals: Limpopo Province* (University of Limpopo)

S.M.R. Philander *A study on the analysis of intermediate phase natural sciences workbooks in promoting the nature of science*
(University of Johannesburg)

K.M. Buthelezi *Teacher pedagogy in using computer simulations in inquiry-based natural sciences teaching* (University of Johannesburg)

A.N. Makhubalo *The empowerment evaluation of a Grade 9 Natural Sciences teacher in shifting towards inquiry-based pedagogy*
(University of Johannesburg)

PhD Thesis examined

Douglas Clerk *Stigmergic Inhibition of the Teaching and Learning of Heuristic Problem-Solving in Physics*
(University of the Witwatersrand)

Critical Reader

Master's research proposals reviewed

Paul Philip Wilton *Content analysis of South African Grade 12 Life Sciences textbooks for practices of inquiry-based learning*
(University of Johannesburg)

George Zimba *Search for octupole deformation in low-spin structure of ^{154}Dy*
(University of Johannesburg)

Lumkile Msebi *Search for intermediate states in rare earth ^{150}Sm nucleus*
(University of Johannesburg)

Mvuyisi Mbabane *^{185}W (n, γ) cross-section constrained with statistical nuclear properties of ^{186}W nucleus* (University of Johannesburg)

PhD research proposals reviewed

Felix Masok *Assessment of radioactivity level of phosphate ore mine dumps tailings and water sampling at Richards Bay, South Africa*
(University of Johannesburg)

Johannes Mvelase *Measurement of natural radioactivity in the soil samples of the mine dumps in the perimeter of Johannesburg and assessing the effects of Acid Mine Drainage in tailings*
(University of Johannesburg)

HOBBIES

Reading, Travelling, Sport

REFEREES

Prof Umesh Ramnarain

Head: Department of Science and Technology Education

Faculty of Education

University of Johannesburg

Tel: 082 054 4713

Email: uramnarain@uj.ac.za

Prof Simon Connell

Professor of Physics

Department of Mechanical Engineering Science

Faculty of Engineering

University of Johannesburg

Tel: 082 945 7508

Email: shconnell@uj.ac.za

Prof Azwinndini Muronga

Executive Dean: Faculty of Science

Nelson Mandela University

Cell: 082 458 4535

E-mail: azwinndini.muronga@mandela.ac.za

Prof Deena Naidoo

Professor of Physics

School of Physics

Faculty of Science

University of the Witwatersrand

Tel: 0825784194

Email: deena.naidoo@wits.ac.za