Scott Arthur Daniel – Curriculum Vitae

BSc (Hons I) DipEd BA GradDipSciComm PhD sdaniel@swin.edu.au +61407215496

Dr Scott Daniel is a STEM education and international development specialist. A former high school mathematics and science teacher, he recently completed his PhD, and is now working as a Research Fellow in Engineering Education. He has worked in 10 countries on 5 continents, and as a consultant and facilitator with UNESCO, Australian Volunteers for International Development, Engineers without Borders Australia (EWB), Unbound, World Vision, the University of Sydney, the Victorian Department of Education and Training, and the Victorian Curriculum and Assessment Authority. He is a Director of EWB Australia, Vice-President of the Bendigo Discovery Science & Technology Centre, a member of the Australasian Association for Engineering Education Executive Committee and the Australian Science Communicators Victorian Steering Committee, and on the Editorial Boards of the Australasian Journal of Engineering Education and the Journal of Humanitarian Engineering. He has also had a regular radio segment as "Dr Scott" on ABC Gippsland, and on ABC Central Victoria, answering listeners' questions about science. His current research focuses on the development of socio-technical and co-design expertise in the context of humanitarian engineering.

Qualifications

GradCert Learning & Teaching	*2019*	*Swinburne University*	*In progress. Expected completion November 2019.*
PhD	2016	Swinburne University	*Experiences of lecturing*
GradDipSciComm	2003	ANU	Chancellor's Letter of Commendation
BA	2002	Macquarie University	Major in maths (Perfect 4.0 GPA at final-year level), with minor studies in psychology, chemistry, and biology
BSc (Hons I) DipEd	1997	Macquarie University	Honours thesis: *A mathematical model of muscle contraction* Teaching methods in physics, chemistry, maths, junior science

Research

Research Fellow in Engineering Education, Swinburne University of Technology (2017-2019)

Associate Editor, Australasian Journal of Engineering Education

PhD thesis: "Experiences of lecturing" – Swinburne University of Technology (2016)

Twenty-seven peer-reviewed journal and conference papers, thirteen as first author. Details below.

Associate Editor, Journal of Humanitarian Engineering.

Co-Editor, Proceedings of the 23rd Annual Conference of the Australasian Association for Engineering Education

Technical Chair, 23rd Annual Conference of the Australasian Association for Engineering Education, 2012.

Reviewer: Journal of Engineering Education, Australasian Journal of Engineering Education, Australian Journal of Multi-Disciplinary Engineering, IEEE (Institute of Electrical and Electronics Engineers) Transactions on Education, Journal of Humanitarian Engineering, International Conference on Physics Education, European Conference on Engineering Education, Annual Conference of the Australasian Association for Engineering Education, World Engineers Convention, Research in Engineering Education Symposium

Research assistant on project: "Developing physics teacher know-how", University of Melbourne, 2011-2012

Research assistant, Melbourne University Department of Astrophysics, 2006-2007

Physics honours thesis: "A mathematical model of muscle contraction" - Macquarie University, 1997

Teaching

2018-2019	Professional development facilitator in the Engineering Practice Academy at Swinburne University of Technology
2011-2019	Tutor, Maths & Statistics Help Centre, Swinburne University of Technology.
2015-2017	Maths tutor for Jesuit Commons: Higher Education at the Margins, which offers online higher education courses to refugees in Malawi, Kenya, Syria, and Jordan
2015	Contributing writer, Jacaranda VCE Physics textbook
2015	Physics Examiner, International Baccalaureat
2013-2015	Victorian Certificate of Education (VCE) Physics Review Panel member
2001-2011	Casual relief high school teacher, various NSW high schools.
2006	Port Vila International School – Science/Maths/Technology Teacher, Years 8-10.
2005	Science teaching consultant, Port Vila International School, Vanuatu
1998-2002	Science teacher at Macquarie Boys' Technology High School, North Parramatta, Western Sydney. Senior physics and chemistry, junior science and maths. Last two terms as Acting Science Head Teacher

Teacher training

2017	Tutor, "Science Curriculum, Pedagogy, and Assessment" – Masters Teaching unit at Australian Catholic University
2015	Implementation Facilitator for the new Victorian Certificate of Education (VCE) Physics Study Design

2009-2010	Australian Volunteers International: Physical Science Advisory Teacher, Zambezi Region, Namibia. Running in-service professional development programs for teachers at the 50 secondary schools in the region.
2007	Science South summer teacher programs: Designing and delivering professional development programs
2003-2004	Questacon – The National Science and Technology Centre. Developed and delivered in-service professional development programs for primary and secondary teachers.
2004-2005	Australian Youth Ambassador for Development: Science/Maths Trainer at the Vanuatu Institute of Technology. Train the Trainer adult numeracy programs with World Vision. Pre-service workshops at the Vanuatu Teacher Training College

International Development

2019	Language and culture trainer for University of Sydney architecture students working on The Freswind School Project
2019	Facilitator on Unbound study tours on Women in Social Enterprise in India, and Global Challenges in Nepal.
2015-2019	Facilitator on the Engineers without Borders (EWB) Humanitarian Design Summit program, a human-centred design educational study tour for undergraduate engineering students. Seven tours to Cambodia, India, & Borneo
2013-2017	Cross-cultural training facilitator with Scope Global for the Australian Volunteers for International Development and the Australian Youth Ambassadors for Development programs
2015-2016	Mentor, Masters of International Development, Monash University
2013-2016	Cross-cultural pre-departure trainer for Deakin University student teachers heading to Vanuatu for their practical placements
2015	Training facilitator with UNESCO Active Learning in Optics and Photonics, working with physics teachers and lecturers from developing countries to implement low-cost active-learning teaching approaches
2011-2012	Selection panel member - Australian Youth Ambassadors for Development (AYAD), Intakes 32 & 34 Selection Panel, reviewing 900+ written applications within tight timelines, interviewing ~120 applicants and their referees, providing constructive feedback to ~100 unsuccessful applicants

Science Communication

2009-2018	Numerous radio shows and media appearances including on Diffusion Science Radio, Vision Australia Radio, STEMpunk, and local, state, national, and international ABC radio (ABC is Australia's public broadcaster). For example, my interview on STEMpunk , or Teaching Science in Namibia - Radio National
2009-2010	I ran the Namibia Mathematics and Science Roadshow, an interactive exhibition that toured to schools throughout the Caprivi and Kavango regions of northeastern Namibia
2008	Tutor and Outreach Presenter, Department of Physics, University of Sydney
2007	Science South – Science Communication Consultant
2003-2004	Shell Questacon Science Circus, presenter then Assistant Co-ordinator.

Selected Awards

Vice-Chancellor's Innovation Award, Highly Commended, Engineering Practice Academy team, 2018.

Best Student Paper "A phenomenography of lecturing", SEFI Conference 2016, Finland

Outstanding Student Award, e-Grad School ATN-LEAP Leadership and Communication module (2015)

Swinburne Research Award for best presentation at Swinburne Living Research Conference (2014)

Finalist, Faculty of Engineering & Industrial Sciences 3 Minute Thesis Competition (2013)

Faculty of Engineering & Industrial Sciences Competitive Awards for Conference Attendance – fully supported to attend the International Conference on Physics Education in Prague and present 2 papers (2013)

Australian Postgraduate Award (2010)

Australian National University Summer School Scholarship (2005)

Australian Youth Ambassador for Development: Science/Maths Trainer at Vanuatu Institute of Technology (2004)

ANU Chancellor's Letter of Commendation for Science Communication (2003)

Shell Questacon Scholarship for Science Communication (2002)

Macquarie University Sports Association Life Member (2000)

Ted O'Keeffe Scholarship (awarded on social contribution, involvement in university sport, and academic merit) (1997)

Targeted teacher graduate (1996)

NSW Teacher Education Scholarship (1993)

Publications

Peer-reviewed journal papers

Daniel, S. (under review). "A phenomenographic outcome space for ways of experiencing lecturing." Higher Education Research & Development.

Daniel, S. and A. Mazzurco (under review). "Assessing co-design expertise in the context of humanitarian engineering." European Journal of Engineering Education.

Mazzurco, A. and **S. Daniel** (in press). "Socio-technical thinking of students and practitioners in the context of humanitarian engineering." Journal of Engineering Education.

Mann, L., R. Chang, S. Chandrasekaran, A. Coddington, **S. Daniel**, E. Cook, E. Crossin, B. Cosson, J. Turner, A. Mazzurco, J. Dohaney, T. O'Hanlon, J. Pickering, S. Walker, F. Maclean and T. D. Smith (In press). "From Problem-Based Learning to Practice-Based Education: A framework for shaping future engineers." European Journal of Engineering Education.

Daniel, S., A. Mazzolini and L. Mann (2017). "Contextual categorisation of academics' conceptions of teaching." Scientia in Educatione **8**: 139-150.

Mazzolini, A. and **S. Daniel** (2015). "Improving students' understanding by using ongoing education research to refine active learning activities in a first-year electronics course." Il Nuovo Cimento C **38**(3): 1-10.

Mazzolini, A., **S. Daniel** and T. Edwards (2012). "Using Interactive Lecture Demonstrations to Improve Conceptual Understanding of Resonance in an Electronics Course." Australasian Journal of Engineering Education **18**(1): 69-88.

Peer-reviewed conference papers

Chang, R., **S. Daniel**, C. Dixon, M. Newbound, M. Toifl and S. Rayburg (under review). "Teaching people design-talk": Critically reflective conversations on cultivating learner empathy in humanitarian engineering. 30th Annual Conference of the Australasian Association for Engineering Education.

Chang, R., **S. Daniel**, C. Dixon, M. Newbound, M. Toifl and S. Rayburg (under review). Whose immersive learning? Emergent themes in critically reflective conversations on engineering teaching practice. 30th Annual Conference of the Australasian Association for Engineering Education.

Mazzurco, A., **S. Daniel** and J. Smith (2019). Development of Socio-Technical and Co-Design Expertise in Engineering Students. Research in Engineering Education Symposium. B. Kloot. Cape Town, South Africa.

Daniel, S. and L. Mann (2018). Using a practice-based approach to develop the holistic engineer. Engineering Education for Sustainable Development: Creating the Holistic Engineer. Glassboro, N.J.

Daniel, S. and N. J. Brown (2018). The Impact of the EWB Design Summit on the Professional Social Responsibility Attitudes of Participants. 2018 ASEE Annual Conference & Exposition. Salt Lake City, American Society for Engineering Education.

Greaves, A., S. Jose, P. K. Surendran and **S. Daniel** (2018). Development towards an electromagnetic concept inventory. AIP Congress. Perth, Australian Institute of Physics.

Daniel, S. and L. M. W. Mann (2017). Embedding social impact in engineering curriculum. 45th SEFI Annual Conference. Angra do Heroísmo, Portugal.

Daniel, S. and L. M. W. Mann (2017). Integrating Social Impact throughout an Engineering Curriculum. 28th Annual Conference of the Australasian Association for Engineering Education. N. Huda, D. Inglis, N. Tse and G. Town. Sydney, Australia, Australasian Association for Engineering Education.

Daniel, S., L. M. W. Mann and A. Mazzolini (2017). Defending interpretivist knowledge claims in engineering education research. 28th Annual Conference of the Australasian Association for Engineering Education. N. Huda, D. Inglis, N. Tse and G. Town. Sydney, Australia, Australasian Association for Engineering Education.

Coddington, A., L. Mann, S. Chandrasekaran, E. Cook, E. Crossin, **S. Daniel**, A. Mazzurco, T. Smith and J. Turner (2017). Grounded by values: An emergent engineering practice. Proceedings of the 28th Annual Conference of the Australasian Association for Engineering Education (AAEE 2017), Sydney, 10-13 December 2017/Nazmul Huda, David Inglis, Nicholas Tse, Graham Town (eds.).

Cook, E., L. M. W. Mann and **S. Daniel** (2017). Co-designing a new engineering curriculum with industry. 45th SEFI Annual Conference. Angra do Heroísmo, Portugal.

Daniel, S., L. M. W. Mann and A. P. Mazzolini (2016). A phenomenography of lecturing. 44th SEFI Conference. Tampere, Finland. [Awarded Best Student Paper].

Daniel, S. and P. Mulhall (2016). Changing attitudes to learning physics through participation in the Victorian Young Physicists' Tournament. Deakin STEMed Conference. Waurn Ponds, Victoria.

Daniel, S. and A. Mazzolini (2014). The messy transition from wrong to right: improvements, but persistent inconsistencies on conceptually-equivalent questions after Interactive Lecture Demonstrations. International Conference on Physics Education. L. Dvorak and V. Koudelkova. Prague, Charles University in Prague, MATFYZPRESS**:** 341-353.

Mazzolini, A. and **S. Daniel** (2014). "The use of active learning methods in introductory electronics deliver positive learning outcomes, yet some academics still resist change." Physical Society of Japan Conference Proceedings **1**: 017006.

Daniel, S., A. Mazzolini and L. Mann (2013). Perceptions of the effectiveness of lectures in improving student conceptual understanding. Australasian Association for Engineering Education Conference. Gold Coast, Queensland, Griffith University.

Daniel, S., A. Mazzolini, P. J. Cadusch and T. Edwards (2012). Addressing student misconceptions of phasors and AC resonance. 20th Australian Institute of Physics Congress. R. Robinson and C. Foley. Sydney, Australia, Engineers Australia.

Daniel, S., A. Mazzolini and M. Schier (2012). Is lecture attendance just a flip of a coin? Australasian Association for Engineering Education Conference. L. Mann and S. Daniel. Melbourne, Australia, The Engineering & Science Education Research (ESER) group, Faculty of Engineering & Industrial Sciences, Swinburne University of Technology**:** 573-582.

Mazzolini, A., **S. Daniel** and L. Mann (2012). A Comparison of On-line and 'In-class' Student Feedback Surveys: Some Unexpected Results. Australasian Association for Engineering Education Conference. L. Mann and S. Daniel. Melbourne, Australia, The Engineering & Science Education Research (ESER) group, Faculty of Engineering & Industrial Sciences, Swinburne University of Technology**:** 644-652.

Mazzolini, A., L. Mann and **S. Daniel** (2012). Overcoming Academic Misconceptions about the Learning and Teaching of Physics. World Conference on Physics Education. Istanbul**:** 369-378.

Referees

Alex Mazzolini, Adjunct Associate Professor, Swinburne University, amazzolini@swin.edu.au +61 416 169 283
Llew Mann, Managing Director, Engineering Practice Academy, Swinburne University, lmann@swin.edu.au, +61 411 779 028
Sian Gard, Chief of Staff, ABC (Australian Broadcasting Corporation) Central Victoria, gard.sian@abc.net.au +61 403 258 054