CURRICULUM VITAE (abridged): CEDRIC LINDER

Name: Linder, Cedric John
Title: Professor, Dr.
Date of Birth: 6 July, 1954

ACADEMIC QUALIFICATIONS

1989: Doctorate in Science Education specializing in Physics Education Research (University of British Columbia).
Thesis: A Case Study of University Physics Students' Conceptualizations of Sound.

1981: Masters in Science Education focusing on physics (Rutgers University).
Research Project: A Computer-Simulated Piagetian Logic Test for Physics Students.

1980: Higher Diploma in Education (Postgraduate; Secondary) (Rhodes University).
Teaching subjects: Physics, Chemistry and Mathematics.

1979: Bachelor of Science with Honours (Physics and Electronics) (Rhodes University*).*
Research Project: A Personalised System of Instruction for Special Relativity.

1978: Bachelor of Science (Physics and Mathematics) (Rhodes, University).
Minor subjects: Chemistry and Psychology.

ACADEMIC POSITIONS HELD

2008 -> : Guest professor, School of Pure and Applied Natural Sciences, Linnaeus University, Kalmar, Sweden (ongoing).

2000 -> : University Appointed Professor of Physics Education Research, Department of Physics and Astronomy, Uppsala University, Sweden (ongoing).

2015 -> : Emeritus Chair Professor, Physics Department, University of the Western Cape.

1999-2000 with ongoing relationship until 2015: Senior Professor of Physics (Physics Education), Department of Physics, University of the Western Cape, South Africa.

1996-1997: Chairperson of the Physics Department, University of the Western Cape, South Africa.

1996: Private Chair Professor of Physics (Physics Education), Department of Physics, University of the Western Cape, South Africa.

1993: Associate Professor of Physics, Department of Physics, University of the Western Cape.

1991: Senior Lecturer, Department of Physics, University of the Western Cape.

1983: Lecturer, Department of Physics, University of the Western Cape.

1980 & 1982: Cape of Good Hope Education Department: physics, chemistry, general science and mathematics high school teacher, Cape Town, South Africa.

DOCTORAL STUDENTS SUPERVISED (principal supervisor)

Jonas Forsman PhD, 2015, Uppsala University, *Complexity Theory and Physics education Research: The Case of Student Retention in Physics and Related Degree Programmes.*

Tobias Fredlund PhD 2015, Uppsala University, *Using a Social Semiotic Perspective to Inform the Teaching and Learning of Physics.*

Urban Eriksson PhD 2014, Uppsala University, *Reading the Sky: From Starspots to Spotting Stars.*

Anna Danielsson PhD 2009, Uppsala University, *Doing Physics - Doing Gender An Exploration of Physics Students' Identity Constitution in the Context of Laboratory Work*

John Airey PhD 2009, Uppsala University, *Science, Language and Literacy. Case Studies of Learning in Swedish University Physics*.

Brandon Reed PhD 2007, University of Cape Town. *Pupils' Experiences of Technology, Exploring Dimensions of Technological Literacy*. (Co-supervised with Jenny Case).

Daniel Domert PhD 2006, Uppsala University. *Explorations of University Physics in Abstract Contexts. From de Sitter Space to Learning Space*.

Tom Adawi PhD 2002, Uppsala University. *From Branes to Brains: On M-theory and understanding thermodynamics*.

Irene Moetsana PhD 2002, University of Cape Town. *A study on how students conceptualise links between basic Newtonian concepts - a phenomenographic perspective*. (Co-supervised by George Ellis).

Busisiwe Alant PhD 2002, University of the Western Cape. *A case study of university students' experiences of introductory physics drawn from their approaches to problem solving*.

Jonathan Clark DEd 2000, University of the Western Cape. *Challenges to practice, constraints on change – a narrative case study of a township science teacher at work*.

Nadaraj Govender PhD 1999, University of the Western Cape. *A phenomenographic study of physics students' experiences of sign conventions in mechanics*.

RECENT RESEARCH GRANTS

(SEK = Swedish Krona, R = South African Rand, k = thousand, M = million)

2017 - ongoing to 2021: 6M SEK, The Swedish Research Council

2017: R100k: South African National Research Foundation Incentive Funding

2013 - 2017: 450k SEK per year, merit research grant from Rector of Uppsala University

2009 - 13: 4,5M SEK, The Swedish Research Council

2009 - 2014: R480k, South African National Research Foundation Incentive Funding

MEMBER OF EDITORIAL BOARDS OF FOLLOWING JOURNALS

2015 - ongoing: European Journal of Physics (from 2019 -- Editor for Physics Education Research).

2013 - ongoing: European Journal of Science and Mathematics Education

2012 - 2016: Physics Review Special Topics Physics Education

2010 - ongoing: African Journal for Research in Mathematics, Science and Technology Education.

RECENT MERIT AWARDS

2017 Obtained an A research rating from the South African National Research Foundation.

2017 American Physical Society award for Outstanding Referee – Lifetime award.

2014 The International Commission on Physics Education (Commission 14 of the International Union of Pure and Applied Physics) Medal in recognition of outstanding contributions to physics education and Physics Education Research.

PEER-REVIEWED JOURNAL ARTICLES (2009-2020)

Eriksson, M., Eriksson, U., **Linder, C**. (2020). Using social semiotics and variation theory to analyse learning challenges in physics: a methodological case study. European journal of physics, 41(6).

Euler, E., Gregorcic, B., **Linder, C.** 2020). Variation theory as a lens for interpreting and guiding physics students' use of digital learning environments. European journal of physics, 41(4) 045705, 1-28.

Volkwyn, T., Airey, J., Gregorcic, B., **Linder, C.** (2020). Developing representational competence: linking real-world motion to physics concepts through graphs. Learning: Research and Practice, United Kingdom. 6(1): 88-107.

Volkwyn, T., Gregorcic, B., Airey, J., **Linder, C.** (2020). Learning to use Cartesian coordinate systems to solve physics problems: the case of 'movability'. European journal of physics, 41(4) 045701, 1-14.

Bruun, J., Lindahl, M., **Linder, C**. (2019). Network analysis and qualitative discourse analysis of a classroom group discussion. International Journal of Research and Method in Education, 42(3): 317-339.

Patron, E., Wikman, S., Edfors, I., Johansson-Cederblad, B., **Linder, C.** (2017). Teachers' reasoning: Classroom visual representational practices in the context of introductory chemical bonding. Science Education, 101(6): 887-906.

Bossér, U., Lundin, M., Lindahl, M., **Linder, C**. (2015). Challenges faced by teachers implementing socio-scientific issues as core elements in their classroom practices. European Journal of Science and Mathematics Education, 3(2): 159-176.

Edfors, I., Wikman, S., Johansson Cederblad, B., **Linder, C.** (2015). University students' reflections on representations in genetics and stereochemistry revealed by a focus group approach. NorDiNa: Nordic Studies in Science Education, 11(2): 169-179.

Forsman, J., Van den Bogaard, M., **Linder, C**., Fraser, D. (2015). Considering student retention as a complex system: a possible way forward for enhancing student retention. European Journal of Engineering Education, 40(3): 235-255.

Fredlund, T, **Linder, C.** & Airey, J. (2015). A social semiotic approach to identifying critical aspects. International Journal for Lesson and Learning Studies, 4(3), 302-316.

Fredlund, T., Airey, J. & **Linder, C**. (2015). Enhancing the possibilities for learning: Variation of disciplinary-relevant aspects in physics representations. European Journal of Physics, 36(5).

Fredlund, T., **Linder, C**., & Airey, J. (2015). Towards addressing transient learning challenges in undergraduate physics: An example from electrostatics. European Journal of Physics, 36(5).

Moll, R., Nielsen, W. & **Linder, C.** (2015). Physics Students' Social Media Learning Behaviours and Connectedness. International Journal of Digital Literacy and Digital Competence, 6(2), 16-35.

Lindahl, M. & **Linder, C.** (2015). What's natural about nature? Deceptive concepts in socio-scientific decision-making. European Journal of Science & Mathematics Education, 3(3), 250-264.

Fredlund, T., **Linder, C**., Airey, J. & Linder, A. (2014). Unpacking physics representations: Towards an appreciation of disciplinary affordance. Physical Review Special Topics: Physics Education Research 10, 020129.

Eriksson, U., **Linder, C.**, Airey, J. & Redfors, A. (2014), Who Needs 3D When the Universe Is Flat? Science Education, 98, 412–442. DOI: 10.1002/sce.21109

Forsman, J., Moll, R. & **Linder, C.** (2014). Extending the theoretical framing for physics education research: An illustrative application of complexity science. Physical Review Special Topics: Physics Education Research, 10(2), 020122.

Forsman, J., Van den Boogard, M**., Linder, C.**, Moll, R., & Fraser, D. (2014). Considering Student Retention as a complex system: A possible way forward for enhancing Student Retention. European Journal of Engineering Education. DOI:10.1080/03043797.2014.941340

Eriksson, U., **Linder, C.**, Airey, J. & Redfors, A. (2014). Introducing the Anatomy of Disciplinary Discernment: An example from Astronomy. European Journal of Science and Mathematics Education, 2(3), 167-182.

Forsman, J., Mann, R.P., **Linder, C.,** & van den Bogaard, M. (2014) Sandbox University: Estimating Influence of Institutional Action. PLoS ONE 9(7): e103261. DOI:10.1371/journal.pone.0103261

Eriksson, U., **Linder, C.,** Airey, J. & Redfors, A. (2014). Who needs 3D when the Universe is flat? Science Education, 98(3), 412–442.

Forsman, J., **Linder, C.,** Moll, R., Fraser, D. & Andersson, S. (2014). A new approach to modelling student retention through an application of complexity thinking. Studies in Higher Education, 39(1), 68-86.

Linder, C. (2013). Disciplinary discourse, representation, and appresentation in the teaching and learning of science. European Journal of Science & Mathematics Education, 1(2), 43-49.

Lindahl, M. & **Linder, C.** (2013). Students' Ontological Security and Agency in Science Education — An Example from Reasoning about the Use of Gene Technology. International Journal of Science Education, 35(14), 2200-2330.

Friis Johannsen, B., Østerberg Rump, C. & **Linder, C.** (2013). Penetrating a wall of introspection: a critical attrition analysis. Cultural Studies of Science Education, 8(1), 87-115.

Enghag, M., Forsman, J., **Linder, C.,** MacKinnon, A. & Moons, E. (2012). Using a disciplinary discourse lens to explore how representations afford meaning making in a typical wave physics course. International Journal of Science and Mathematics Education. Online First. DOI 10.1007/s10763-012-9357-9i

Fredlund, T., Airey, J. & **Linder, C.** (2012). Exploring the role of physics representations: an illustrative example from students sharing knowledge about refraction. European Journal of Physics, 33, 657-666.

Lindahl, M. and **Linder, C.** (2011) Students' Ontological Security and Agency in Science Education — An Example from Reasoning about the Use of Gene Technology. International Journal of Science Education, 1-32.

Linder, C. & Lippmann Kung, R. (2011). An exploratory study into the complexity of relations between physics lecturers' crafting of practice and students' expectations of quality teaching. Instructional Science, 39:4, 513-526.

Case, J.M., Marshall, D. & **Linder, C.** (2010). Being a student again: a narrative study of a teacher's experience. Teaching in Higher Education, 15:4, 423-433.

Airey, J. & **Linder, C.** (2009). A disciplinary discourse perspective on university science learning: Achieving fluency in a critical constellation of modes. Journal of Research in Science Teaching, 46 (1), 27-49.

Linder, C. & Fraser, D. (2009). Higher Education Science and Engineering: Generating Interaction with the Variation Perspective on Learning. Education as Change, 13(2), 277-291.

Collier-Reed, B., Case, J. & **Linder, C.** (2009). The experience of interacting with technological artefacts. European Journal of Engineering Education, 34 (4), 295-303. Special issue: Educational Research Impacting Engineering Education.

Fraser, D. & **Linder, C.** (2009). Teaching in higher education through the use of variation: examples from distillation, physics and process dynamics. European Journal of Engineering Education, 34 (4), 369-381. Special issue: Educational Research Impacting Engineering Education.

Ingerman, Å., **Linder. C.** & Marshall, D. (2009). The learners' experience of variation – Following students' threads of learning physics in computer simulation sessions. Instructional Science, 37(3), 273-292.

Danielsson, A. & **Linder, C.** (2009). Learning in Physics by doing Laboratory Work: toward a new Conceptual Framework. Gender and Education, 21 (2), 129-144.