

CURRICULUM VITAE <i>of</i> DEONARAIN BRIJLALL
--

PERSONAL PARTICULARS

NAME	:	DEONARAIN BRIJLALL
IDENTITY NO.	:	6208255148085
RANK	:	PROFESSOR
INSTITUTION	:	DURBAN UNIVERSITY OF TECHNOLOGY
MARITAL STATUS	:	MARRIED WITH 2 CHILDREN
RESIDENTIAL ADDRESS	:	37 Halpin Avenue, Reservoir Hills, 4091
HOME TEL.NO.	:	2623667 (CODE 031)
CELL	:	0835552390
CITIZENSHIP	:	SOUTH AFRICAN
NRF RATING	:	C2

CURRICULUM VITAE

NAME: Deonarain Brijlall	POSITION TITLE: Prof Position: Professor
E-mail: brijlald@ukzn.ac.za	

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education and include postdoctoral training.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
UDW – South Africa	B.Sc	1984	Maths, Applied Maths
UDW – South Africa	B.Sc (Hons)	1985	Maths
UDW – South Africa	UHDE	1986	Education (Maths, Physics, Chemistry)
UNISA – South Africa	B.Ed (Hons)	1989	Education
Sastri Technical College – South Africa	Nat. Tech Dip	1992	Technical (Electronics)
Univ of Natal – South Africa	M.Sc (cum laude)	1999	Maths (Topology)
UDW – South Africa	PhD	2003	Maths (Topology)

A. Positions and Honours.

- Was part-time lecturer in the Department of Mathematics and Applied Mathematics at University of Durban-Westville during 1985. Also was part time tutor/demonstrator in this department in 1984.
 - Was awarded bursaries in 1982 by BP and in 1983 by CSIR for studies towards my majors and honours degree.
 - Was first appointed at Stanger Secondary School in January 1986. Remained there from 1986 to 1991. I left the school on promotion at the end of 1991. Awarded the achievement recognition for meritorious service in 1989.
 - Appointed sub-examiner for Physical Science P1 ((HG/SG) in 1989, 1990 and 1991). Mathematics P1 (SG) in 1994 and Mathematics P1 (HG) in 1995.
 - Was appointed lecturer of Mathematics at Springfield College of Education on 01 January 1992.
 - Served as acting associate head of department for 1996. Also appointed acting head of department for 1999.
 - Was appointed tutor for the MAT 101, 102 and 103 modules by University of South Africa during 1996 and 1997.
 - Appointed senior sub-examiner for Additional Mathematics by KwaZulu – Natal Education Department for Mathematics in 1994, 1995 and 1996.
 - Awarded a grant for presentation of two papers at AMESA conference in 1997 by FRD.
 - Was appointed examiner for senior certificate subject Additional Mathematics for 2000 and 2004 for the province of KwaZulu-Natal.
 - Appointed as field researcher on the Quality of Learning Project (conducted by HSRC) for phase 1 in 2001.
 - Appointed lecturer in Mathematics Education in Faculty of Education –University of Natal on 01- 01-2002.
 - Currently lecturer in the School of Science, Mathematics and Technology Education at UKZN.
 - Awarded a competitive grant by the University of Natal in 2005. Awarded a grant by UKZN for 2007/2008 for research in teaching of module Mathematics for Educators 410.
 - Served (at times) as acting head of school for SSMTE in 2005 and 2006
 - Served as head of the mathematics education discipline from June 2005 to August 2006.
 - Nominated by Faculty of Education (UKZN) to serve on the Higher Education Quality Committee of CHE as an ACE evaluator in 2007. Served as evaluator for the ACE review at UFS (Bloemfontein campus) and UNW (Mafeking campus).
 - Nominated cluster coordinator (for zone 2) by the professional practicum office for 2010 and 2011 to administer activities related with teaching practice (both for PGCE and B Ed).
 - Served as discipline coordinator by the school for 2007 to 2010 to administer activities related with teaching practice (both for PGCE and B Ed).
 - Nominated as faculty representative for the First Year University Orientation Project and member of the steering committee in 2010 and 2011 at UKZN.
 - Invited to participate in the Oxford Roundtable on curriculum issues at Oxford University in 2008.
-

- Nominated by the KZN provincial department of education to coordinate and present mathematics on-air talk shows presented on radio station Lotus FM in 2010.
- Member of the South African mathematical Society (2002 – 2007).
- Nominated by the Ministry of Ghana to quality assure mathematics education programs at three higher education institutions in Ghana in 2010.
- Member of the KZN Provincial mathematical society (2003 – 2011)
- Member of the Association for Mathematics Education for South Africa (1995 – 2011)
- Member of the Southern African association for Research in Mathematics, Science and Technology Education (2002 – 2011).
- Lectured mathematics to Civil engineering, Electrical engineering and Surveying students at Mangosuthu University of Technology in 2012.
- Lectured Maths 4 to B Tech students from 2013 to 2015.

B. Selected peer-reviewed publications (in chronological order with latest dates last).

Note that the underlined publications are the SAPSE accredited ones.

- 1 **Brijlall, D.** (1996). Graphical solutions to algebraic inequalities. *Proceedings of the second national Congress* (pp. 64 – 68). Cape Town: AMESA.
 - 2 **Brijlall, D.** (1996). Misleading questioning techniques. *Proceedings of the second national congress* (pp. 64 - 68). Cape Town: AMESA.
 - 3 **Brijlall, D.** (1997). Graphical solutions to algebraic inequalities. *Pythagoras* 44, 23-27.
 - 4 **Brijlall, D.** (1998). Some unintentional blunders. *Pythagoras*, 45 1-3.
 - 5 **Brijlall, D.** (2001). Dimension Theory of the Stone-Cech Compactification in Frames. Appeared in the programme of the 44th Annual Conference of the South African Mathematical Society in 2001.
 - 6 **Brijlall, D.** (2005). A real Analysis course for BEd undergraduate students. *Presented at the 1st Africa Regional Congress of the International Commission of Mathematical Instruction*. University of Witwatersrand.
 - 7 Jojo, Z.M.M., **Brijlall, D.**, & Maharaj, A. (2005). Mathematical Concepts embedded in Technology education. *Proceedings of the 1st Africa Regional Congress of the International Commission of Mathematical Instruction*. Witwatersrand (on CD).
 - 8 **Brijlall, D.**, Maharaj, A., & Jojo, Z.M.M. (2006). The development of geometrical concepts through design activities during a Technology education class. *African Journal of Research in SMT Education*, 10, 37-45.
 - 9 Maharaj, A. **Brijlall, D.** & Molebale, J. (2006). The teaching of fractions. *Bulletin for academic staff and Students*, 16(1), 5 - 18.
 - 10 Maharaj, A., **Brijlall, D.** & Molebale, J. (2007). Teachers' views on practical work in the teaching of fractions: a case study. *South African Journal of Education*. 27(4), pp. 597-612.
 - 11 Maharajh, N., **Brijlall, D.** & Govender, N. (2008). Pre-service teachers' conception of continuity of single-valued functions. *Proceedings of the 16th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education*. Maseru: SAARMSTE.
 12. **Brijlall, D.** & Maharaj, A. (2008). Applying APOS theory as a theoretical framework for collaborative learning. ICME 11. Mexico.
 - 13 **Brijlall, D.** & Baboolal, D. (2008). Some aspects of dimension theory of frames. *Indian journal of pure and applied mathematics*. 39(5), pp 1 - 28.
 14. Maharajh, N., **Brijlall, D.** & Govender, N. (2008). Preservice mathematics students' notions of the concept definition of continuity in calculus through collaborative instructional design worksheets. *African Journal of Research in SMT Education*, 12, 93 – 108.
 - 15 **Brijlall, D.** (2008). Collaborative learning in a multilingual class. *Pythagoras*. 68, pp. 52-61.
 - 16 **Brijlall, D.** & Maharaj, A. (2009). An APOS analysis of students' constructions of the concept of continuity of a single valued-function. *Proceedings of the Seventh Southern Right Delta conference on the teaching and learning of undergraduate mathematics and statistics* (pp. 36-49). Gordan's Bay, South Africa.
 17. **Brijlall, D.** & Maharaj, A. (2010). An APOS analysis of students' constructions of the concepts of monotonicity and boundedness of sequences. *Proceedings of the 18th annual meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (Vol 1, pp. 51 – 62). University of KwaZulu- Natal, South Africa.
 18. Jojo, Z.M.M., **Brijlall, D.** & Maharaj, A. (2010). A genetic decomposition of the chain rule. *Proceedings of the 18th annual meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (Vol 3, pp. 77 – 81). University of KwaZulu- Natal, South Africa.
 19. Maharajh, N., **Brijlall, D.** & Govender, N. (2010). A learning theory approach. *Proceedings of the 18th annual meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (Vol 3, pp. 106 – 115). University of KwaZulu- Natal, South Africa.
 - 20 Makhithini, T. & **Brijlall, D.** (2010). An exploration of grade nine learners fractional conceptions in two secondary schools. *Proceedings of the 18th annual meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (Vol 3, pp. 225 - 232). University of KwaZulu- Natal, South Africa.
-

21. **Brijlall.D.** (2010). Individualised Teacher Support Intervention-a case study. *Learning and Teaching Mathematics* (Vol. 8, pp. 4-13). University of Witwatersrand, South Africa.
 22. **Brijlall.D** & Bansilal.D. (2010). A genetic decomposition of the Riemann Sum by student teachers. *Proceedings of the 18th annual meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (Vol 2, pp.131 – 138). University of KwaZulu- Natal, South Africa.
 23. **Brijlall.D.** & Maharajh.N. (2010). Exploring a theoretical framework to understand student learning of concepts in differential calculus. *Proceedings of the 16th Annual AMESA National Congress* (Vol. 1, pp. 81 – 98). Durban, South Africa.
 24. Molebale.J., **Brijlall.D.** & Maharaj.A. (2010). Exploring the learning of fractions at grade seven. *Proceedings of the 18th annual meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (Vol 2, pp.215 – 220). University of KwaZulu- Natal, South Africa.
 25. **Brijlall.D.** & Maharaj.A. (2010). Application of Dubinsky's theoretical framework. *Presentation at the School of Mathematical Sciences – University of KwaZulu-Natal.*
 26. Molebale.J., **Brijlall.D.** & Maharaj.A. (2010). Exploring the teaching of fractions at grade seven. *Proceedings of the 18th annual meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (Vol 2, pp.221 – 236). University of KwaZulu- Natal, South Africa.
 27. **Brijlall.D.** & Baboolal, D. (2010). The Katetov-Morita Theorem for the Dimension of Metric Frames. *Indian journal of pure and applied mathematics.* 41(3), pp 535 - 553.
 28. **Brijlall.D.** (2011). A case study of lecturers' views on content knowledge and practice. *Proceedings of the nineteenth Annual Meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (34 – 50). North-West University, Mafekeng, South Africa.
 29. **Brijlall,D.** & Maharaj, A. (2011). Using an inductive approach for definition making: monotonicity and boundedness of sequences. *Pythagoras*, 70. pp. 68 – 79.
 30. **Brijlall.D.** (2011). Solving word problems in a multilingual class. *Proceedings of the nineteenth Annual Meeting of the Southern African Association for Research in Mathematics, Science and Technology Education* (50 – 65). North-West University, Mafekeng, South Africa.
 31. **Brijlall, D.** & Maharaj, A (2011). A Framework for the development of Mathematical Thinking with Teacher trainees: The case of continuity of functions. *US-China Education Review- Education theory*, 5 (1).
 32. Gayadeen, R. & **Brijlall.D.** (2011). The application of concepts in electricity in design activities during a technology education class: work in progress. *Proceedings of the nineteenth Annual Meeting of the Southern African Association for Research in Mathematics, Science and Technology Education.* North-West University, Mafekeng, South Africa.
 33. **Brijlall, D.,** Maharaj, A., & Molebale, J. (2011). Understanding the teaching and learning of fractions: A South African high school case study. *Journal of US-Chine Education Review*, 9(1).
 34. **Brijlall, D.** (2011). Error detection as mathematical catalyst. *Learning and Teaching Mathematics, A Journal of The Association for Mathematics Education of South Africa* (Vol. 11). University of Witwatersrand, South Africa.
 35. **Brijlall, D.** & Bansilal, S. (2011). Student teachers' engagement with re-contextualised materials: a case of numerical approximation. *US-Chine Education Review – education practice*, 5(1). 691-702.
 36. **Brijlall, D.** & Isaac, V. (2011). Links between content knowledge and practice in a mathematics teacher education course: a case study. *South African Journal of Higher Education.* 25 (4), 680-699.
 37. **Brijlall, D.,** Maharaj, A., Bansilal, S., Mkhwanazi, T., & Dubinsky., E. (2011). A pilot study exploring pre-service teachers understanding of the relationship between 0, $\frac{9}{9}$ and 1. *Proceedings of the 17th Annual AMESA National Congress.* Witwatersrand, South Africa.
 38. Jojo, Z.M., Maharaj, A., & **Brijlall.D.** (2011). The reliability of a research instrument used to measure the mental constructions in the learning of the chain rule in calculus. *Proceedings of the 17th Annual AMESA National Congress.* Witwatersrand, South Africa.
 39. **Brijlall, D.** (2012). Error detection as mathematical catalyst: Part 2. *Learning and Teaching Mathematics, A Journal of The Association for Mathematics Education of South Africa* (Vol. 12). University of Witwatersrand, South Africa.
 40. Jojo, Z.M.M, Maharaj, A. & **Brijlall, D.** (2012). Reflective abstraction: The genetic decomposition of the chain rule in calculus. *US-China Education Review B* 2(4), 408 – 414.
 41. **Brijlall, D.,** Bansilal, S. & Moore-Russo, D. (2012). Exploring teachers' conceptions of representations in mathematics through the lens of positive deliberative interaction. *Pythagoras*, 33(2).
 42. Ndlaazi., N.J. & **Brijlall, D.** (2012). Piloting a research instrument used to explore students' conceptual development of integral calculus. In J Wassermann & S Reddy (Eds). *Proceedings of the 2012 Postgraduate Conference of the University of KwaZulu-Natal College of Humanities* (pp. 1-15), Durban, South Africa:Prontaprint.
 43. **Brijlall, D.** & Maharaj, A. (2013). Pre-service teachers understanding of continuity of functions in the context of assessment items. *South African Journal of Higher education* 27(4).
 44. **Brijlall, D.** & Ndlovu, Z. (2013). Exploring high school learners' mental construction during the solving of optimization. *South African Journal of Education.* 33 (2), 1-18.
-

45. Jojo, Z.M.M.M., Maharaj, A., & Brijlall, D. (2013). Schema development for the chain rule: A South African case. *South African Journal of Higher Education*, 27(3), 645-661.
 46. Jojo, Z.M.M. , Maharaj, A. , and Brijlall , D. (2013). From Human Activity to Conceptual Understanding of the Chain Rule. *Journal of Research in Mathematics Education*, 2 (1), 77-99. doi:http://doi.dx.org/10.4471/redimat.2013.21
 47. Brijlall, D. (2014). Exploring Practical Work as a Sustainable Strategy in Rural Mathematics Classrooms: A Case of Addition of Fractions. *International Journal of Educational Sciences*, 7(3), 481- 490.
 48. Bansilal, S., Brijlall, D. & Mkhwanazi, T. (2014). An exploration of the common content knowledge of high mathematics Teachers. *Perspectives in Education*, 32(1), 34-50.
 49. Brijlall, D (2014). Exploring the Pedagogical Content Knowledge for Teaching Probability in Middle School: A South African Case Study. *International Journal of Educational Sciences*, 7(3), 719-726.
 50. Brijlall, D. (2014) Exploring the Gurteen Knowledge Café approach as an innovative teaching for learning strategy with first-year Engineering students. *Groupwork*, 24(3), 26-45.
 51. Brijlall, D. & Maharaj, A. (2014). Exploring Support Strategies for High School Mathematics Teachers from Underachieving Schools. *International Journal of Educational Sciences*, 7(1), 99-107.
 52. Brijlall, D. (2014). Innovative Pedagogy: implications of genetic decompositions for problem solving in management courses. *Nitte Management Review*, 8(2), 23-31.
 53. Maharaj, A, Brijlall, D. & Narain, O.K. (2015). Improving proficiency in Mathematics through Website-based Tasks: A case of basic algebra. *International Journal of Educational Sciences*, 8(2), 369-386.
 54. Ndlovu, Z.A., & Brijlall, D. (2015). Pre-service teachers' mental constructions of concepts in matrix algebra: A South African case. *African Journal of Research in Mathematics, Science and Technology Education*, DOI:10.1080/10288-457.2015.1028717.
 55. Brijlall, D., & Niranjan, C. (2015). Using manipulatives to support an embodied approach to learning trigonometry in a South African school: A case study. *Africa Education Review*, 12(3), 361-380.
 56. Brijlall, D., & Maharaj, A. (2015). Exploring pre-service teachers' mental constructions when solving problems involving infinite sets. *International Journal of Educational Sciences*, 9(3), 265-271.
 57. Ally, N., Brijlall, D., Rajah, S.S., Day, D., Maharaj, A. & Lortan, D. (2015) Using E-Learning Support as a Sustainable Communication Tool. *Journal of Communication*, 6(1), 172-181.
 58. Brijlall, D. (2015). Exploring The Stages of Polya's Problem Solving Model during Collaborative Learning: A Case of Fractions. *International Journal of Educational Sciences*, 11(3), 291-299.
 59. Ally, N, Brijlall, D. & Maharaj, A. (2016). Investigating the Impact of E-Learning Support Material on First Year Engineering Students' Mathematics Learning. *Journal of Communication*, 7(2).296-303.
 60. Ndlovu, Z., & Brijlall, D. (2016). Preservice Mathematics Teachers' mental constructions of the determinant concept. *International Journal of Educational Sciences*, 14(12), 145-156.
 61. Brijlall, D., & Ally, N. (2017). *Transforming traditional mathematics classrooms using e-learning support*. In S. K. Wagle, R. K. Dhakal, B. C. Luitel, S. Gautam, B. P. Pant & I. M. Rai (Ed.). First International Conference on Transformative Education Research and Sustainable Development, October 21-23, 2016. Dhulikhel, Nepal.
 62. Brijlall, D. (2017). Using Questionnaires in the Learning of Congruency of Triangles to Incite Formal and Informal Reasoning. *International Journal of Educational Sciences*, 17(1-3), 224-237.
 63. Brijlall, D., & Thabethe, B.M. (2017). An exploration of the utilization of mathematical skills by Technology Education pre-service teachers during electronic systems design. *PONTE International Journal of Sciences and Research*, 73(5), 159-178.
 64. Maharaj, A., & Brijlall, D. (2017). Exploring moodle as a platform in promoting effective mathematics teaching and learning. *PONTE International Journal of Sciences and Research*, 73(6), 32-49.
 65. Brijlall, D., & Maharaj, A. (2017). Using groupwork as a learning strategy of Laplace Transform by engineering students. *PONTE International Journal of Sciences and Research*, 73(6), 345-354.
 66. Dlamini, R. B., Brijlall, D., & Jojo Z. (2017). Exploring possible intervention programmes to improve learner performance in certain application problems in Calculus. *PONTE International Journal of Sciences and Research*, 73(9): 189-213.
 67. Dlamini, R. B., Brijlall, D., & Jojo Z. (2017). Exploring common errors made by high school students in Differential Calculus. *PONTE International Journal of Sciences and Research*, 73(8), 310-331.
 68. Dlamini, R. B., Brijlall, D., & Jojo Z. (2017). Exploring possible causes of poor performance by high school students in Differential Calculus. *PONTE International Journal of Sciences and Research*, 73(8), 295-309.
 69. Krsihnanair, A., Maharaj, A., & Brijlall, D. (2017). Mathematical Literacy curriculum for the first year non-science major students: impressions of purpose versus experience of purpose. *PONTE International Journal of Sciences and Research*, 73(8), 291-310.
 70. Brijlall, D. (2017). Exploring in-service teachers' definition making of certain classes of geometrical shapes within a
-

- van Hiele framework. *PONTE International Journal of Sciences and Research*, 73(7), 305-321.
71. Brijlall, D. (2017). Exploring outcomes of a post graduate mathematics curriculum. *New Generation Sciences*, 15(1), 207-223.
 72. Brijlall, D. (2017). Exploring possible causes of poor performance by engineering students in Fourier Transforms: an APOS analysis. *PONTE International Journal of Sciences and Research*, 73(9), 111-123.
 73. Maharaj, A., & Brijlall, D. (2017). Using groupwork as a learning strategy for Inverse Laplace Transform by Engineering students. *PONTE International Journal of Sciences and Research*, 73(8), 166-180.
 74. Bansilal, S., Brijlall, D., & Trigueros, M. (2017). An APOS study on pre-service teachers' understanding of injections and surjections. *Journal of Mathematical Behaviour*, 48, 22-37.
 75. Maharaj, A., & Brijlall, D. (2017). Group dynamics involving engineering students solving Fourier Series problems. *PONTE International Journal of Sciences and Research*, 73(8), 342-354.
 76. Ndlazi, N.J., & Brijlall, D. (2018). Exploring engineering students' understanding of techniques of integration. *Journal for New Generation Sciences*, 16(2), 59-75.
 77. Ally, N., & Brijlall, D. (2018). Validating a Research Instrument: Diagnostic test for first year university of technology Engineering Mathematics students. *International Journal of Teaching and Learning*, 4(1), 7-15.
 78. Brijlall, D., & Ndlazi, N.J. (2019). Analysing engineering students' understanding of integration to propose a genetic decomposition. *Journal of Mathematical Behavior*, <https://doi.org/10.1016/j.jmathb.2019.01.006>.
 79. Ndlovu, Z., & Brijlall, D. (2019). Pre-service teachers' mental constructions when using Cramer's rule. *South African Journal of Education*, 39 (1), 1-13.
 80. Madonsela, P.S., Ndlovu, Z.A., & Brijlall, D. (2019). Teaching and learning of trigonometry as emancipatory in schools. *The Independent Journal of Teaching and Learning*, 14(2), 72-91.
 81. Brijlall, D. (2019). *Using a constructive theory to formulate genetic decompositions for quality mathematics teaching*. In J. Naidoo & R. Mudaly (Eds.). Proceedings of the 25th Annual Congress of the association for Mathematics Education of South Africa, 1-5 July 1-5, 2019, University of KwaZulu-Natal, Pinetown.
 82. Brijlall, D. (2020). Best Practices and Case Studies of Teaching and Learning Mathematics in Higher Education. In Sony, M.; Karingada, K.T., & Baporikar, N (Eds.). *Quality Management Implementation in Higher Education: Practices, Models, and Case Studies*. Hershey, PA: IGI Global. doi:10.4018/978-1-5225-9829-9.
 83. Madonsela, P.S., Ndlovu, Z.A., & Brijlall, D. (2020). An APOS exploration of students solving three dimensional problems using trigonometry. *Technology Reports of Kansai University*, 62(4), 1303-1319.
 84. Maharaj, A., & Brijlall, D. (2020). Teachers' understanding of grade 12 mathematics content: A case study. *Technology Reports of Kansai University*, 62(4), 2077-2091.
 85. Ally, N., & Brijlall, A. (2020). Integrating online diagnostic tests for first year engineering tests. *Eurasia Journal of Mathematics, Science and Technology Education*, 16 (10), 1-15. <https://doi.org/10.29333/ejmste/8396>.
 86. Chagwisa, C., Maharaj, A., & Brijlall, D. (2020). University students' mental constructions on the concept limit of a sequence. *African Journal of Mathematics, Science and Technology Education*. DOI.org/10.1080/18117295.2020.1839709.
 87. Chagwiza, C.J., Maharaj, A., & Brijlall, D. (2020). University students' mental construction when learning the Convergence of a Series concept. *Pythagoras*, 41(1), a567. <https://doi.org/10.4102/pythagoras.v41i1.567>.
 88. Brijlall, D. (2020). An APOS Analysis of engineering students' understanding of the nature of solutions of a system of linear equations *Technology Reports of Kansai University*, 62(09), 5361-5374.

C. Research Support.

A project entitled "A Real Analysis Module for FET BEd Graduates" commenced in 2005 and ended in 2012. This was conducted by me as main investigator and Prof. A. Maharaj from the Science faculty. This has resulted in a short paper presented at 1st Africa Regional Congress of The International Commission on Mathematical Instruction held between the 22nd and 25th June 2005 at the University of Witwatersrand. This paper investigated the aptness of an undergraduate Mathematics module (taught to fourth year Bachelor of Education teacher-trainees) to the 'new' FET Mathematics curriculum for which these teacher-trainees are being prepared. A theoretical outlook to links between concepts in Real Analysis (Mathematics for Educators 410 module) and ideas in the forthcoming curriculum is pursued in the first part of the project.

The following three aims related to the three parts of the project:

1. To research the relatedness of Real Analysis for B Ed mathematics FET student teachers with the new FET school-based topics (introduced via the OBE curriculum).
2. To research the implementation of a novice pedagogical approach in the presentation of the Real Analysis course to B Ed student teachers.
3. To analyse the above approach with learning styles as already implemented in engineering education in USA by Felder and Sfar's and Dubinsky's Learning theories.

Numbers 2 and 3 of the aims were worked at and a draft papers were written. These papers reported on a research method involving the implementation of worksheets, group-work and written responses which were introduced to investigate fourth-year university students' understanding of two fundamental concepts of monotonicity and boundedness of sequences. These concepts were taught to undergraduate teacher trainees wishing to specialise in the teaching of mathematics in the FET school curriculum. A group of twenty

three students participated in the project. These papers, in the main, report on the investigation of students' responses based on a learning theory within the context of advanced mathematical thinking and make a contribution to an understanding of how these students construct these two topics. The project led to two SAPSE accredited journal papers published in 2011. These are listed in 29 and 33 above.

I was also involved in another project which is in progress (in collaboration with Nelson Mandela Metropolitan University and Witwatersrand University). This is project funded by Anglo-American, teacher education units at three South African universities have engaged in developing research based, learner centred, conceptually focused material designed especially to teach calculus to teachers. We ask whether the activities from the material introduced as a didactical situations, through devolution? Are they followed by phases of institutionalization? What factors do the lecturers identify as influential in determining how they adapt the activities from the material?

I was co-investigator in a project funded by the NRF entitled "*Calculus for teachers*". This project investigates the effectiveness of the materials developed in the above mentioned project. Many graduate (masters and doctoral) students participate in this project. In this project, I have included a masters student who has analysed data on the teaching of calculus from the Mathematics for Educators 220 module. This research has led to the successful completion of a masters degree (student Mrs V Isaacs) and a long peer reviewed conference publication in 2011 listed as 28 above.

I was co-investigator with Dr A Maharaj on a project called "*UKZN ESKOM MATHEMATICS PROJECT*". The project considers research which informs what needs to be at the university and also in the schooling context, with the focus on improving the teaching and learning of mathematics. A grant has been granted by ESKOM for the next five years. This project has allowed us to research students' conceptualization of infinite decimals in the Mathematics for Educators 410 module. This investigation has allowed me to work collaboratively with people across campuses and with overseas experts. I have led this aspect of the research and we have done a pilot study, the results of which I will present at the future conference hosted by The Association for Mathematics Education of South Africa. The paper is: **Brijlall, D, Aneshkumar Maharaj, Sarah Bansilal, Thokozani Mkhwanazi and Ed Dubinsky. (2011). A pilot study exploring pre-service teachers understanding of the relationship between 0, $\bar{9}$ and 1.**

I am co-investigator on the project "Mathematics **e-learning** and assessment: South African context" funded by HP in the United States of America. Our mathematics group from the School of Mathematical Sciences studied first year engineering students' misconceptions at UKZN and formulated website tasks to address these misconceptions. Three members (Prof A Maharaj, Dr O K Kumar and me) from the group researched the basic algebra section and a paper reporting on this study has been collated and published by a SAPSE accredited journal.

D Teaching

I was involved in the design of ACE and BEd modules since 2002. I have taught on various qualifications including B Ed, B Ed (Hons), M Ed and ACE. I was involved in teaching across all phases in the B Ed degree including primary and secondary mathematics education modules. In the B Ed (Hons) Independent Research module, I am involved in supervising students and introducing them to the skills and competences in basic research. I have lectured a course in Real Analysis to fourth year students (in 2004, 2005, 2006, 2007, 2008, 2009, 2010 and 2011), to BEd (Hons) on problem solving (in 2003), Differential and Integral Calculus (in 2003, 2004, 2006, 2009), in Ordinary Differential Equations (in 2003, 2004, 2005, 2006 and 2008). When I taught Primary mathematics education 310 in 2003, a "new" technique (as apposed to traditional methods) was adopted using an inductive approach applying examples and non-examples. The worksheets and models developed at these lectures were used in my conduction of a workshop for practicing teachers. This workshop was organized by the KwaZulu-Natal branch of AMESA. I have also adopted a "new" (as apposed to traditional methods) approach to teach certain concepts in the Real Analysis course. This method uses worksheets and group-work activities. The worksheets were designed in accordance with ideas postulated by a guided problem solving model. Cangelosi suggested how meaningful mathematics teaching could be planned with the aim of simultaneously addressing the cognitive and affective domains.

I taught on two modules to the M Ed students: Current Issues and Frontiers in Mathematics Education (in 2007 and 2011) and Social, Cultural and Political Perspectives in Mathematics Education (in 2008 and 2010). In 2007 and 2008, I am currently (2010, 2011) external examiner to the Master of Mathematics Education module (coursework) at Rhodes University. I was involved in the design of students' learning guide for the module Data handling and statistics for Mathematical Literacy. This was prepared for use by tutors who were trained by me over four days. They then supported students in various parts of the province. I implement a PC tablet during my lectures and this allows me to effectively apply electronic opportunities. I also present my course materials on moodle platform for easy student access.

Supervision of post graduate students

Masters Dissertation

- 1) Mthembu. S. (Student Number 911353881) – completed in 2007.
 - 2) Mkhize S.A (Student Number 961115063) – completed in 2006
 - 3) Molebale.J.J.L (Student Number 964121004) – completed in 2006
-

- 4) Zingiswa .M.M.J (Student Number 201506651) – completed in 2006
- 5) Makhathini Thamsanqa (student Number 200272421) - completed in 2007
- 6) Mbili L.A (Student Number 964109142)- completed 2012
- 7) Mduli F.G (Student Number 201506658)- completed in 2014
- 8) Isaac C (Student Number 8421455)- completed in 2010
- 9) Ndlovu A Z (student number 994246135) – completed 2012
- 10) Thabethe B. M (student No 206525561- completed in 2012
- 11) Niranjana C (212559567) – completed 2014.
- 12) Kazembe (46789987) – registered 2015 UNISA
- 13) RB Dlamini (30721709) – completed in 2017. UNISA
- 14) AN Nkumbule (8572143 – registered 2018, UNISA

Doctoral Thesis

- 1) Zingiswa .M.M.J (201506651) – completed in 2012
She is currently associate professor at UNISA
- 2) Pillay E (202520287) – completed in 2018
- 3) Khan M (202523848) – current
- 4) Prof Ndlazi N J (92542320) – VC for teaching and innovations at the Mangosuthu University of Technology-completed 2016.
- 5) Molebale JJ (964121004) – lecturer at UKZN– current.
- 6) Mrs Z E Ndlovu (994246125)- lecturer at UKZN-completed 2015
- 7) Mr A Krishnanair (206523383) – mathematics lecturer at University of Zululand – completed 2016
- 8) Mr C Chagwisa – lecturer Bindura University of Science Education-Zimbabwe-completed 2020
- 9) Nr B M Thabethe – lecturer UKZN-completed in 2018
- 10) Niranjana C – 21452071 at DUT current
- 11) Ally N – 951049841 at DUT – completed in 2020
- 12) Mukhavi L (21752073) - at DUT current
- 13) Ivasen S (21752018) at DUT – current
- 14) Dlamini RB (39721709) at UNISA - current

Examining of masters/doctoral dissertation/thesis

I have externally examined the following masters and doctoral dissertations/thesis:

Name of student/student number/supervisor	Name of institution	Broad Field	Topic	Year
R.Hermelin 202520442 Prof.P.Hobden	UND	M Ed-Science Education	The interplay between chess and mathematics performance.	2002
L.W.Teffo 200208324 Prof.I.Chacko	University of Limpopo	M Ed-Science Education	A study of the “actual assessment practices” in Natural Science classrooms as measured against the “ideal assessment practices” in OBE.	2007
F.Nkuna 200208184 Prof.I.Chacko	University of Limpopo	M Ed-Science Education	Developing and equipping grade 7 teachers with effective and innovative teaching strategies-a social constructivist approach.	2007
B.Likwambe 952332982 Prof.I.Christiansen	UKZN	M Ed-Maths Education	A Case Study of the development of ACE students’ concept images of the Derivative.	2007
Naidoo.C Dr.R.Naidoo	DUT	M Ed-Maths Education	Students’ understanding of elementary differential calculus concepts in a computer learning environment at a university of technology.	2007
Dowlath E Prof V Mudaly	UKZN	M Ed-Maths Education	Exploring pre-service mathematics teachers’ knowledge and use of mathematical modeling as a strategy for solving real-world problems.	2008
Moodley U 204515520 Prof V Mudaly	UKZN	M Ed-Maths Education	A study of learners’ conceptual development in Mathematics in a grade eight class using the concept map approach.	2009
Pillay E 202520287 Prof S Bansilal	UKZN	M Ed-Maths Education	Grade twelve learners understanding of the concept of the Derivative.	2009
Mafata P	UKZN	M Ed-	An investigation into the utility of a Learner Management	2009

206512039 Prof I Govender		Educational Technology	System in postgraduate educational technology modules: A Case study of a South African University.	
Zulu M Z 206520485 Prof R Sookraj	UKZN	M Ed-Science Education	Learning difficulties experienced by grade twelve rural learners in physical science.	2010
J.Naidoo 205524804 Prof V Mudaly	UKZN	Ph D - Mathematics Education	Exploring master teachers use of visuals as tools in mathematics classrooms	2011
R S Uddin 204400477 Prof V Mudaly	UKZN	M Ed-Mathematics Education	Geogebra, a tool for mediating in the teaching and learning of transformation of functions in mathematics.	2012
R Debba 8320375 Prof S Bansilal	UKZN	M Ed-Mathematics Education	An exploration of the strategies used by grade 12 mathematical literacy learners when answering mathematical literacy examination question papers based on real-life contents	2012
P T Mahlabela 209530150 Prof S Bansilal	UKZN	M Ed-Mathematics Education	Learner errors and misconceptions in ratio and proportion	2012
A.Pooran 20934395 Prof P Singh	DUT	M Ed-M Tech-Language and Mathematics	Teaching word problems in English to second language grade 8 learners in the Mafukuzela-Gandhi circuit.	2012
A Giannakopoulos 909046395 Dr K Luneta	UJ	Ph D-Mathematics Education	How critical thinking, problem solving and mathematics content knowledge contribute to students' performance at tertiary level: identifying their journeys	2012
R.Govender 8217781 Prof M De Villiers	UKZN	Ph D-Mathematics Education	Constructions and justifications of a generalization of Viviani's Theorem	2012
Mrs ML Phatudi-Milanzi 5727 Dr K Chuene	University of Limpopo	M Ed Maths Ed	Using Grade 10 Learners' Responses to Classroom Tasks on Factorisation of Second Degree Equations to analyse their Structure Sense	2013
Mr M S Mbonambi 207520775 Prof S Bansilal	University of KwaZulu-Natal	M Ed Maths Ed	An exploration of the strategies used by Grade 11 Mathematical literacy learners to respond to the result-unknown and start-unknown questions set within various concepts	2013
Ms Monika Rohlwink, 211298034 Prof J Cronjè	Cape Peninsula University of Technology	M Tech	The value of attrition retraining in the reduction of maths anxiety experienced by first-time Design students at a South African university of technology	2015
Mr A Ramsunder 2105034621 Dr P Singh and Dr VS Singh	UKZN	M Sc	A discrete Hartley Transform based on Simpson's Rule	2015
Ms ME Bopape (9548548) Dr Chuene	UL	M Ed	Exploring Limpopo Province's senior phase mathematics teachers' pedagogical content knowledge of algebra using content representations	2016
Mr RG Govender (207501841) Prof J Naidoo	UKZN	M Ed	Exploring pre-service teachers' views on the use of technology based teaching methods for teaching geometry	2016
Mr IP Nnanyereago 3216726	UWC	PhD	An analysis of pre-service teachers' ability to use a dialogical argumentation instructional model to solve mathematical problems in Physics.	2017

Prof R Govender				
Ms PN Khambule Dr P Singh Dr V Singh	UKZN	M Sc	Eigenvalue bounds for matrices	2018
Ms C Kazunga Prof S Bansilal	UKZN	PhD	APOS analysis of matrix algebra	2018
Mr Z Ndemo Prof D Mtetwa	University of Zimbabwe	Ph D	Undergraduate student teachers' conceptualization of mathematical	2018
Ms G Sunzuma (216076211) Prof A Maharaj	UKZN	Ph D	Exploring In-service Zimbabwean mathematics teachers' preparedness to incorporate ethno mathematics approaches to geometry teaching and learning	2019
Mr GH Godebo (214578033) Dr J Naidoo	UKZN	M Ed	Exploring Grade 11 learners' use of the GeoGebra programme when learning Euclidean Geometry	2019
Ms L Mutambara (215081400) Prof S Bansilal	UKZN	Ph D	An APOS analysis of the understanding of vector space concepts by in-service mathematics teachers.	2019
Ms T Mlilo (215082701) Prof J Naidoo	UKZN	M Ed	Exploring the integration of technology based tools in the intermediate phase mathematics classroom.	2020
M Edmore (216076200) Prof A Maharaj	UKZN	PhD	An investigation of secondary school mathematics teachers' knowledge and utilization of their students' learning styles.	2020
T Talasi (201760013) Dr A Krishnannair	UNIZULU	D Ed	An exploration of final year pre-service mathematics teachers' learning experiences in solving non-routine financial mathematics problems at a south African university	2020

E Service.

Appointed acting discipline coordinator of the mathematics education department for 2005/2006.

Appointed as first year B.Ed (FET) coordinator in 2009. 2010 and 2011.

Acted as head of the school of SMTE during 2006 and 2007 on an intermittent basis when the HOS was on leave.

Appointed cluster coordinator for teaching practice for the faculty in 2007, 2008, 2010 and 2011.

Appointed first year coordinator for orientation programme in 2008, 2009, 2010 and 2011 for the Faculty of Education. Coordinator of masters programme in mathematics education in 2005.

Nominated in the promotions committee for the faculty of education for 2005 appointments.

Nominated to serve on the promotion interviews for HOS for SSMTE in 2004 and 2006.

Served on the committee "The mathematics popularization initiative" in 2004 and 2005.

Co-authored study aids for senior certificate students in additional mathematics which resulted in the following two publications under the auspices of the School of Mathematical and Statistical Sciences:

Brijlall,D., Maharaj,A.,&Mogambery,M. (2003). Additional mathematics study aid (1st ed).

Brijlall,D., Maharaj,A.,&Mogambery,M. (2006). Additional mathematics study aid (2nd ed).

I have **conducted workshops** for the teaching of new topics at AMESA regional workshops in 2005, 2006 and 2010. These workshops are for current practicing educators.

I was involved in reviews for the HEQC in three sites during 2007. I was in teams evaluating the ACE qualifications.

I was **editor** of the following two books in 2007:

Bridgelal, K. (2007). A Guide to Mathematics: Higher Grade. Tess Publishing cc: Umbilo, Durban.

Bridgelal, K. (2007). A Guide to Mathematics: Standard Grade. Tess Publishing cc: Umbilo, Durban.

I review student proposals and dissertations for research in mathematics education for University of Limpopo and UKZN. I am external examiner for then Linear Algebra module offered at University of Witwatersrand. I am also external examiner of the masters coursework for Rhodes University (2010).

I review research papers for The African Journal for Research in Mathematics, Science and Technology Education and the South African Journal of Education.

Assisted on a voluntary basis to coach grade twelve learners in disadvantaged school (Shallcross

Secondary) for the final examinations in 2008.

Trained practicing teachers in the KwaMashu and Ntezuma districts in 2010 and 2011. The topic dealt with was Mathematics of Finance and part of the INK project.

Served as cluster coordinator for professional practicum for the faculty of Education in 2007, 2008, 2009 and 2010.

Was leader of two teams Durban and Ethweni Teams which participated in the international World Youth Mathematics Inter-City Competition ([IWYMIC](#)) held at ICC and hosted by AMESA .This took place in June 2009. The Durban team won bronze.

Was nominated by the Ministry of Education of Ghana to evaluate mathematics programmes at three tertiary education institutions for accreditation purposes in 2010

Was reviewer of conference papers for the SAARMSTE and AMESA conferences in 2009, 2010 and 2011. Also reviewer of papers for the African Journal of Research in SMT Education , Pythagoras , Learning and Teaching mathematics Journal and the South African Journal for Research in education in 2009, 2010 and 2011.

Chaired and sat in School Higher Degrees Research sub-committee deciding on masters and doctoral students proposal defense in 2009, 2010, 2011 and 2012.

Currently serves on the editorial board of: 1) US-China Education Review: Education Theory (ISSN 2161-6248), 2) US-China Education Review: Education Practice (ISSN 2161 – 623X), and 3) Afrasian Journal of Humanities and Social Sciences (ISSN: 1694 – 2566)

Was awarded the top ten distinguished researcher award in 2015.

Was placed in the list of top twenty distinguished researchers in 2016.



Prof D Brijlall

03-06-2020