

CURRICULUM VITAE

Professor Maria Teresa Rojano Ceballos

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Teresa Rojano has conducted research in the didactics of algebra with a special focus on the transition from arithmetic to algebraic thought. She has conducted collaborative research with the Bristol University and the London University on school algebra and mathematical modelling within technology environments, funded by the *Spencer Foundation*, the *British Council*, and *The National Council of Science and Technology* (Mexico). Since 1975 she has been based at the Centre of Research and Advanced Studies (Cinvestav) of the National Polytechnic Institute in Mexico, where she was appointed Professor of Mathematics Education in 1985. She was vice-president of the International Group for the Psychology of Mathematics Education (1995-1997); member of the Program Committee of the International Congress of Mathematics Education (2001-2004); leader (with Luis Puig) of the History Group for the Algebra Study of the International Commission for Mathematical Instruction; and director of the Mexican project *Incorporation of New Technologies to the School Culture*. From 1997 to 2003, she was head of the Department of Mathematics Education - Cinvestav and was advisor of the Ministry of Education (SEP) in Mexico from 2003 to 2006. Since 2004, she has been an academic advisor for the “New Model for the Tele-secondary School” project (Latin American Institute of Educational Communication -SEP); and since 2008, she is a member of the Advisory Board of the James J. Kaput Center for Research and Innovation in Mathematics Education (UMASSD). In May 2009 she was invited to be a member of the International Advisory Board of the Journal for Research in Mathematics Education (NCTM). Since 2013 is member of the Editorial Board of the journal *Educational Studies in Mathematics*, published by Springer, in 2018 she was invited to be a member of the Editorial Board of the journal *Mathematical Thinking and Learning*, published by Routledge. In 2012, Teresa Rojano was appointed Emeritus Professor at Cinvestav.

Education

- *Postdoctoral*: University of London, UK. Mathematics Education and Computing Environments, 1987-1988.
- *Graduate*: Center of Research and Advanced Studies (Cinvestav-Mexico City) Mexico. PhD in Mathematics Education, 1985.
- *Graduate*: Center of Research and Advanced Studies (Cinvestav-Mexico City) Mexico. M. in Sc., Mathematics Education, 1978.
- *Undergraduate*: National Autonomous University of Mexico (UNAM) Mexico. B.Sc., Mathematics, 1975.

Employment (and appointments)

- 2012- Professor Emerita – Centre of Research and Advanced Studies, IPN
- 1985- Full Professor: Department of Mathematics Education, Centre of Research and Advanced Studies.
- 1975-84 Departmental Lecturer: Department of Mathematics Education, Centre of Research and Advanced Studies (Cinvestav) Mexico.
- 1974-75 Departmental Lecturer: Department of Mathematics, Metropolitan Autonomous University (UAM) Mexico.
- 1972-74 Assistant Professor (Mathematics): Department of Mathematics, Faculty of Science - National University of Mexico (UNAM).
- 2003-05 Advisor of the Elementary Education Sub-Secretary: Secretary of Education (SEP), Mexico.
- 1997-03 Head of the Department of Mathematics Education: Cinvestav, Mexico.
- 1984- National Researcher (level-III), appointed by the National Council of Science and Technology (Conacyt) Mexico.
- 2002- Mexican Academy of Science (Regular member).

Representative research projects

- 1992-94 Mexican/British Project on Modeling and Problem Solving in Mathematics with Spreadsheets (Co-Director) (funded by National Council of Science and Technology-Mexico and The British Council).
- 1993-95 Mexican/British Project on the Role of Spreadsheets within School-based Mathematical Practices (Co-Director) (funded by The Spencer Foundation, Chicago, Ill).
- 1997-00 The Incorporation of New Technologies to the School Culture (PI) (funded by National Council of Science and Technology-Mexico).
- 2008-11 Instrumental Genesis and Models of Formal Competence: Appropriation processes of digital technologies for the learning of mathematics and science (PI) (funded by National Council of Science and Technology-Mexico).
- 2012-15 Intelligent Dialogues with Middle School and Higher Education Students (PI) (funded by National Council of Science and Technology-Mexico).
- 2018- Development of Algebra Structure Sense with digital apps and intelligent support – Frontier Sciences Project (PI) (National Council of Science and Technology-Mexico).

Representative publications (in chronological order)

- Palmas, S., Rojano, T & Sutherland, R. (2020). Digital technologies as a means of accessing powerful mathematical ideas. A study of adults with low schooling in Mexico. *Teaching Mathematics and its Applications*. Oxford University Press. doi:10.1093/teamat/hraa004, p 1-24
- Rojano, T. and García-Campos, M. (2016). Teaching Mathematics with intelligent support in natural language. Tertiary education students working with parametrized modelling activities. *Teaching Mathematics and its Applications*. Oxford University Press. doi:10.1093/teamat/hrw009. p 1-13.

- Rojano, T. (2016). Students' Access to Mathematics Learning in the Middle and Junior Secondary Schools. In Lyn D. English & David Kishner (Eds.) *Handbook of International Research in Mathematics Education*. 3rd Edition. ISBN: 9780415832045 (ppb); ISBN: 780415832038 (hdb); ISBN: 9780203448946 (e- book). Routledge, Taylor & Francis Group.
- Rojano, T., Filloy, E., & Puig, L. (2014). Intertextuality and sense production in the learning of algebraic methods. *Educational Studies in Mathematics* 87 (3), pp 389- 407.
- Rojano, T. (Ed.) (2013). *Las Tecnologías Digitales en la Enseñanza de las Matemáticas*. México D.F.: Trillas.
- Rojano, T & Abreu, J.L. (2012). Dialogues with Prometheus: Intelligent support for the teaching of mathematics. In C. Kynigos, J. Clayson, & N. Yiannoutsou (Eds.) *Constructionism: Theory, practice and impact*. Proceedings of the 2012 - Constructionism Conference. Athens, Greece: University of Athens (544 -548).
- Filloy, E., Rojano, T. & Solares, A. (2010). Problems dealing with unknown quantities and different levels of representing the unknown. *Journal of Research in Mathematics Education (JRME)*.
- Sacristán, A. I., Calder, N., Rojano, T., Santos-Trigo, M., Friedlander, A., & Meissner, H. (2010). The influence and shaping of digital technologies on the learning – and learning trajectories – of mathematical concepts. In C. Hoyles & J-B Lagrange (Eds.). *Mathematics Education and Technology – Rethinking the Terrain* (The 17th ICMI Study), chapter 9, pp. 179-226. NY, Dordrecht, Heidelberg, London: Springer.
- Filloy, E.; Rojano, T. & Puig, L. (2008). *Educational algebra. A theoretical and empirical approach*. Berlin, Heidelberg, N.Y.: Springer. ISBN 978-0387-71253-6.
- Filloy, E.; Puig, L. & Rojano, T. (2008). El estudio teórico local del desarrollo de competencias algebraicas. *Enseñanza de las Ciencias*, 24(5):327-342.
- Rojano, T (Ed.). (2006) *Enseñanza de la Física y las Matemáticas con Tecnología: Modelos de transformación de las prácticas y la interacción*

social en el aula. Co-ed Organización de Estados Iberoamericanos (OEI)-
Secretaría de Educación Pública (SEP), Mexico. ISBN 970-790-885-8.

- Rojano, T. (2004). Local Theoretical Models in Algebra Learning: A Meeting Point in Mathematics Education, *Psychology of Mathematics Education – North American Chapter*, Toronto, 1, 37-56.
- Puig, L. & Rojano, T. (2004). The History of Algebra in Mathematics Education. In Stacey, Chick y Kendal (Eds). *The Future of the Teaching and Learning of Algebra*, pp. 189-224. Boston/Dordrecht/New York/London: Kluwer Academic Publishers.
- Rojano, T. (2002). Algebraic Reasoning with Spreadsheets, International Seminar *Reasoning explanation and proof in school mathematics and their place in the intended curriculum*, Qualification and Curriculum Authority, UK, 3-19.
- Rojano, T. (2002). The Potential of Spreadsheets in the Learning of Algebra. *The International Journal of Education Policy Research and Practice*, USA. 3 (2), 91- 106.
- Sutherland, R., Rojano, T., Bell, A, & Lins, R. (Eds.) (2001). *Perspectives on School Algebra*. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Molyneux, S.; Rojano, T.; Sutherland, R. & Ursini, S. (1999) Mathematical Modeling: The interaction of Culture and Practice. *Educational Studies in Mathematics*. Special Issue Teaching and Learning Mathematics in Context, P. Boero, (ed.) 39 : 167-183.
- Sutherland, R. & Rojano, T. (1993). A Spreadsheet Approach to Solving Algebra Problems. *The Journal of Mathematical Behavior*, 12, 351-383.

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