



Marta Romero Ariza (Ariza, M.R.; Romero-Ariza, M.)

Brief Biographic sketch

Dr. Marta Romero Ariza studied Chemistry at the University of Granada and carried out her Ph.D. on Organic Chemistry, at this University. She was awarded as European Doctor in 2002, after conducting part of her research abroad and presenting her thesis in English to an International Board. She spent several years researching on the chemical properties of natural products with biological activity, but in 2006 her passion for supporting others in the understanding and use of scientific ideas to explain the physical world made her change her area of expertise to science education.

Since then, she has been a lecturer and researcher at the Department of Didactics of Sciences in the University of Jaén (Spain) where she is Associate Professor now. She has been working on teacher education and the development of innovative pedagogies and resources to facilitate science understanding and meaningful knowledge in students. Her main research interests are Critical Thinking, Nature of Science (NOS), Socio-Scientific Issues (SSI), Environmental Education, Inquiry Based Learning (IBL) and science-enhanced learning through ICT.

She has been actively engaged in several international projects such as COMPASS, PRIMAS, Mascil, PARRISE, IncluSMe, MasDiV, GEM and MOST, in the last five, as the main researcher of the Spanish team.

She has organised and attended different National and International Conference on Science Education and published a wide variety of papers on Science Education, with h-index 12 and 1100 cites in Google Academic. Orcid <https://orcid.org/0000-0002-2930-4089>

WORK EXPERIENCE

May 2019- Present

Director of the International Project Office of the University of Jaen

- Promoting research and innovation funded by international programs.
- Estimulating interdisciplinary and intersectorial research and innovation.
- Enhancing excellence, relevance and impact in international research and innovation.

2012 - 2015

Vice Dean of the Faculty of Humanities and Learning Sciences, UJA

- Management and supervision of the Education Degree for Primary School Teachers at the University of Jaén
- Responsible for the following up and evaluation of the Teaching Programs associated with the Education Degree of the University of Jaén (Quality insurance)
- Recognition of studies related to the Education University Degree
- Supervision of learning agreements associated with students' international exchanges in the Education Degree of the University of Jaén
- Counselling (guidance and support to students and academic staff involved or interested in the Education Degree of the University of Jaén)
- Management and supervision of the Partnerships with Primary Schools across Jaén Province for external practices in teacher initial education.

March 2006 - Present

Associate Professor at the Faculty of Humanities and Learning Sciences

- Lecturer in the Education Degree for Primary School Teachers at the University of Jaén
- Lecturer in the Environmental Sciences Degree at the University of Jaén
- Lecturer in the Master Degree for Secondary and High School teachers at the University of Jaén
- Lecturer for PhD courses in Science Education at the University of Jaén

EDUCATION AND TRAINING

May 2016-August 2016

Research stay at the University of Nottingham

- Cross-national studies on teachers' beliefs and practices related to inquiry-based learning.

July 2000-August 2000

Professional development at the University of Kean (New Jersey)

- Communicative and teaching skills
- Innovative Educational Methodologies

July 1999-December 2000

Research stay at the Technical University of Lyngby (Denmark)

- Application of microbiological techniques for the study of different *Penicillium* species
- Use of high resolution equipments for the separation and identification of natural products with biological properties
- Isolation and structural elucidation of new fungal metabolites of interest for the Food Industry.

1998-2002

PhD Thesis title: Chemical Study of Limonoids and *Penicillium digitatum* metabolites

- Study of the plant-pathogen interaction in citrus infection by *Penicillium digitatum*
- Research on the potential use of plant defensins as natural food preservatives.

1991-1995

Bachelor of Chemistry

University of Granada (Spain)
Special Award for the Best Academic Achievement

RECENT PROJECTS

MOST: Meaningful Open Schooling Connects Schools To Communities

<https://cordis.europa.eu/project/id/871155>

01/09/2020-31/08/2023

Reference: H2020-SwafS-2019-2-two-stage, Grant Agreement ID 871155

Funded: European Commission (H2020)

Budget 1792522,75 euros

Participants: 23 European Institutions

<https://cordis.europa.eu/project/id/871155>

GEM - Empower Girls to Embrace their Digital and Entrepreneurial Potential

<https://ec.europa.eu/digital-single-market/en/news/pilot-project-gem-empower-girls-embrace-their-digital-and-entrepreneurial-potential>

01/01/2020- 31/12/2021

Reference: Agreement number: LC-01380173 (Girls4STEM-2019)

Budget: 346450 euros

Participants: 11 European Institutions

MaSDiV: Supporting Mathematics and Science Teachers in Addressing Diversity and Promoting Fundamental Values.

<https://icse.eu/international-projects/masdiv/>

28/02/2017-27/02/2020

Reference 582943-EPP-1-2016-2-DE-EPPKA3-PI-POLICY

Funder: European Commission

Budget 1913005,00 euros

Participants: 11 European Institutions

IncluSMe: Intercultural Learning in Mathematics and Science Initial Teacher Education

<http://inclusme-project.eu>

01/09/2016-31/08/2019

Reference 2016-1-DE01-KA203-002910

Funder: European Commission

Budget 431.750,00 euros

Participants: 11 European Institutions

PARRISE: Promoting Attainment of Responsible Research and Innovation in Science Education

<http://www.parrise.eu>

01/01/2013-31/12/2016

Reference FP7-SIS-612438

Funder: European Commission (FP7)

Budget 2899978 euros

Participants: 17 European Institutions, see http://cordis.europa.eu/projects/rcn/111216_en.html

Mascil: Mathematics and Science for Life

<http://www.mascil-project.eu>

01/01/2013-31/12/2016

Reference FP7-SIS-320693

Funder: European Commission (FP7)

Budget 3298170 euros

Participants: 21 European institutions see <https://cordis.europa.eu/project/id/320693>

PRIMAS: Promoting Inquiry-based learning in Mathematics and Science Education Across Europe)

<http://primas-project.eu>

01/01/2010-31/12/2013

Reference FP7-SIS-244380

Funder: European Commission (FP7)

Budget 299916 euros

Participants: University of Education of Freiburg (coord.), University of Geneva, Utrech, Nottingham, Jaén, Nitra, Szeged, Roskilde, Manchester, Babes-Boyai, Sor-Trondelang, Kiel and Cyprus, University of Technology...

COMPASS: Common Problem-Solving Strategies as Links Between Mathematics and Science

<http://www.compass-project.eu>

01/11/2009-01/11/2011

Reference 503635-LLP-1-2009-1-DE-COMENIUS-CMP

Funder: European Commission.

Budget 299916 euros

Participants: University of Education of Freiburg (coord.), Utrecht University, Cyprus University of Technology, University of Jaén, University of Manchester, Constantine the Philosopher University in Nitra.

CYTPENCRI: Promoting Scientific Competences and Critical Thinking Through Teaching and Learning about the Nature of Science

01/01/2016-31/12/2019

Reference: EDU2015-64642-R

Funder: MINECO / FEDER

Budget 40000,00 euros

Participants: Univ. de Las Islas Baleares, Jaén, Valladolid, Rio de Janeiro, Méjico, Colombia, Brasil, Argentina, Portugal, SENACYT (Panamá), Univ. Autónoma de Baja California (Méjico), UNAM (Méjico)...

EANCYT: Teaching and Learning about Nature of Science and Technology

01/01/2011-31/12/2013

Reference: EDU2010-16553

Funder: Ministerio de Ciencia y Innovación

Budget 114950 euros

Participants: Univ. de Las Islas Baleares, Jaén, Valladolid, Rio de Janeiro, Méjico, Colombia, Brasil, Argentina, Portugal, SENACYT (Panamá), Univ. Autónoma de Baja California (Méjico), UNAM (Méjico)...

European Network for Environmental Citizenship <http://enec-cost.eu>

RECENT PUBLICATIONS

- Ariza, M. R., Boeve-de Pauw, J., Olsson, D., Van Petegem, P., Parra, G., & Gericke, N. (2021). Promoting Environmental Citizenship in Education: The Potential of the Sustainability Consciousness Questionnaire to Measure Impact of Interventions. *Sustainability*, 13(20), 11420.
- Ariza, M. R., Christodoulou, A., Harskamp, M. V., Knippels, M. C. P., Kyza, E. A., Levinson, R., & Agesilaou, A. (2021). Socio-Scientific Inquiry-Based Learning as a Means toward Environmental Citizenship. *Sustainability*, 13(20), 11509.
- Maass, K., Sorge, S., Ariza, M.R., Hesse, A., Straser, O. (2021). Promoting Active Citizenship in Mathematics and Science Teaching. *International Journal of Science and Mathematics Education*, 1-20. <https://doi.org/10.1007/s10763-021-10182-1>
- Ariza, M.R., Quesada, A., Abril, A. M., & Cobo-Huesa, C. (2021). Changing teachers' self-efficacy, beliefs and practices through STEAM teacher professional development. *Journal for the Study of Education and Development*, 44(4), 1-33. <https://doi.org/10.1080/02103702.2021.1926164>
- Ariza, M. R., Armenteros, A. Q., & Gallego, A. M. A. (2020). Construcción de una máquina eólica: Indagar en primaria desde los nuevos estándares de ciencias. *Aula de innovación educativa*, (298), 31-36.
- Ariza, M. R., Quesada, A., Abril, A. M., Sorensen, P., & Oliver, M.C. (2020). Highly recommended and poorly used: English and Spanish science teachers' views of inquiry-based learning and its enactment. *EURASIA Journal of Mathematics, Science and Technology Education*, 16(1), 1-16. <https://doi.org/10.29333/ejmste/109658>
- Huesa, C. C., Gallego, A. M. A., & Ariza, M. R. (2020). Indagación reflexiva e historia de la ciencia para construir una visión adecuada sobre la naturaleza de la ciencia en formación inicial de profesorado. *Tecné, Episteme y Didaxis: TED*, (48), 13-31
- Rosales Sánchez, E. M., Rodríguez Ortega, P. G., y Romero Ariza, Marta (2020) Conocimiento, demanda cognitiva y contextos en la evaluación de la alfabetización científica en PISA. *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias* 17(2), 2302. doi: 10.25267/Rev_Eureka_ensen_divulg_cienc.2020.v17.i2.2302
- Maass, K., Geiger, V., Ariza, M. R., & Goos, M. (2019). The Role of Mathematics in interdisciplinary STEM education. *ZDM*, 51(6), 869-884. <https://doi.org/10.1007/s11858-019-01100-5>.
- Rodríguez Ortega, P. G., Jaraíces, R. C., Ariza, M. R., & Montejo, M. (2019). Developing Students' Scientific Reasoning Abilities with an Inquiry-Based Learning Methodology: Applying FTIR Spectroscopy to the Study of Thermodynamic Equilibria in Hydrogen-Bonded Species. *Journal of Chemical Education*, 96(5), 1022-1028.
- García, F. J., Quesada, A., Romero-Ariza, M. R., Abril, A. (2019) Promoting Inquiry in Mathematics and Science: Professional Development of Primary and Secondary School Teachers. *Educación XX1*. 22(2,) 335-359. DOI: 10.5944/educXX1.23513
- Ariza, M. R., Abril, A. M., & Quesada, A. (2018). Empowering teachers to bring authenticity and responsive action into the science classroom. *School Science Review*, 100(371), 40-45.
- Ariza, M. R. (2017). Education and Responsible Research and Innovation: International perspectives. *Sisyphus – Journal of Education*, 5(3), 6-10. <http://revistas.rcaap.pt/sisyphus/article/view/13432/10246>
- Ariza, M. R., Abril, A. M., & Quesada, A. (2017). Design and Evaluation of Teaching materials for Responsible Research and Innovation. *Sisyphus – Journal of Education*, 5(3), 28-43. <http://revistas.rcaap.pt/sisyphus/article/view/12273/10271>
- Ariza, M. R., Quesada, A., & Abril, A. M. (2017). Science Teachers as Key Actors in Responsible Research and Innovation: Evaluation of a Teacher Training Program. *Sisyphus – Journal of*

Education, 5(3), 107-121. <http://revistas.rcaap.pt/sisyphus/article/view/12274/10272>

Ariza, M. R. (2017). Inquiry-Based Learning: is there enough evidence of its benefits in science education? *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias*, 14 (2), 286-299. <http://rodin.uca.es/xmlui/handle/10498/19218>

Ariza, M. R., Abril, A. M., Quesada, A. (2017). Connecting socio-scientific issues, nature of science and critical thinking to face current challenges in science education. *Enseñanza de las Ciencias*, nº extraordinario, 515-520. Available at https://ddd.uab.cat/pub/edlc/edlc_a2017nEXTRA/31.conectando_los_temas_socio-cientificos.pdf

Abril, A. M., Quesada, A. Ariza, M. R. (2017). Developing Responsible Research and Innovation and Interest in Scientific Research. *Enseñanza de las Ciencias*, nº extraordinario, 533-538. Available at https://ddd.uab.cat/pub/edlc/edlc_a2017nEXTRA/33_-_Desarrollar_investigacion_e_innovacion_responsables.pdf

Quesada, A., Ariza, M. R., Abril, A. M. (2017). Socio Scientific Issues and Inquiry-Based Learning in Initial Teacher Education. Implementation and preliminary analysis of an educational intervention. *Enseñanza de las Ciencias*, nº extraordinario, 2189-2194. Available at https://ddd.uab.cat/pub/edlc/edlc_a2017nEXTRA/47_-_Controversias_Socio-Cientificas_y_Aprendizaje_por_Investigacion_Guiada.pdf

Ariza, M. R., Aguirre, D., Quesada, A., Abril, A. y García, F. J. (2016). Wool or metal? Inquiry Based Learning on the thermal properties of common materials. ¿Lana o metal? Una propuesta de aprendizaje por indagación para el estudio de las propiedades térmicas de materiales comunes. *Revista Electrónica de Enseñanza de las Ciencias*, 15(2), 297-311.

Ariza, M. R., Quesada, A., Abril, A.M. & García, F.J. (2016). Promoting Responsible Research Through Science Education. Design and Evaluation of a Teacher Training Program. In L. Gómez Chova, A. López Martínez, I. Candel Torres (Eds.) *INTED2016 Proceedings*, 10th International Technology, Education and Development Conference (pp. 1-10). Valencia (Spain): IATED Academy. ISBN 978-84-608-5617-7.

Ariza, M. R., Abril, A. M. & Quesada, A. (2015). What happens when teachers research on dragons? Evaluation of a teaching and learning sequence to facilitate the understanding of Nature of Science (¿Qué ocurre cuando los maestros/as en formación investigan dragones? Evaluación de una secuencia de enseñanza para facilitar la comprensión de la Naturaleza de la Ciencia). *Interacções*, 34, 67-90. Available at <http://revistas.rcaap.pt/interaccoes/article/view/6924>

Ariza, M. R., Vázquez, A., Quesada, A. & Aguirre, D. (2015). Plasticine Ships: Design and Evaluation of a teaching and learning sequence to improve understanding on the Nature of Science. (Barcos de Plastilina: diseño y evaluación de una secuencia de enseñanza y aprendizaje para mejorar la comprensión sobre la Naturaleza de la Ciencia). *Interacções*, 34, 266-2. Available at <http://revistas.rcaap.pt/interaccoes/article/view/6933>

Ariza, M. R., Herrador del Pino, M. M. y Barrero, A. F. (2015). Germinating Seeds of Citrus aurantium a Good Source of Bioactive Limonoids. *Natural Product Communications*, 10(6), 869-870.

Ariza M. R. & Quesada, A. (2015). Is the science taught useful to explain daily phenomena? A qualitative study with pre-service teachers. In *ICERI2015 Proceedings* (pp. 2150-2156). Seville (Spain): IATED Academy. ISBN: 978-84-608-2657-6

Ariza, M. R. & Quesada, A. (2014). ICT and meaningful Science Learning (Nuevas Tecnologías y aprendizaje significativo de las Ciencias). *Enseñanza de las Ciencias*, 32(1), 101-105. Available at <http://ensciencias.uab.es/article/view/v32-n1-romero-quesada>

Ariza, M. R. (2014). Bridging Research, Policy and Educational Practice: DBR, Challenges and Opportunities (Uniendo investigación, política y práctica educativas: DBR, desafíos y oportunidades). *magis, Revista Internacional de Investigación en Educación*, 7(14), 159-176. Available at <http://revistas.javeriana.edu.co/index.php/MAGIS/article/view/11863>

Ariza, M. R., Abril, A.M., Quesada, A. & García, F.J. (2014). Bridging Inquiry Based Learning and Science Education on Socio Scientific Issues: Contributions to the PARRISE European Project. In L. Gómez Chova, A. López Martínez, I. Candel Torres (Eds.) In *INTED2014, Proceedings*, 8th International Technology, Education and Development Conference. (pp. 2599-2607).