

European Curriculum Development and Innovation in Mathematics using a Culturally Responsive Pedagogical Approach to teaching Shape and Space at Secondary School Level



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This paper builds on global maths curriculum research which shows that using an Ethnomathematical approach to teach pupils can be very effective when situating the subject culturally. Although this is a key area for development and practice in regions of the world such as Sub-Saharan Africa, Latin America, Asia, North America and Oceania, it is currently limited in Europe and in the UK in particular. This paper is positioned as an early career researcher interested in basing potential empirical exploration of a culturally responsive pedagogy in examination Maths classes when teaching Shape and Space, an area for development, annually identified by Chief Examiner GCSE Reports within the subject, PISA and TIMSS data (Elvas Fernández & Ramírez Uclés, 2025; Farran, 2025; Mária Kmetová and Rumanová, 2024). The research will build on the theories and academic findings of Urbitan D'Ambrosio (2001), Ariesta Kartika Sari, Mega Teguh Budiarto and Rooselyna Ekawati (2022), Renuka Vithal, and Ole Skovsmose (1997), Alexandre Pais (2010), Athena Ross and Casey Wells (2025), and Marjorie Batiibwe (2024, 2025). This will provide an excellent foundation for planning a qualitative and quantitative, culturally situated and informed methods, using socially enacted research into this approach within a European community, secondary school context, with the ultimate aim of guiding curriculum development in maths to increase scores in Shape and Space in the foreseeable future.

Biography:

Dr Sam Stewart is Course Leader for PGCE (Secondary) Art and Design at Sheffield Hallam University, and a University Practitioner at the University of Huddersfield. She has taught and led departments in the Arts, Design and Technology and Maths at Secondary school level for almost thirty years and now trains teachers at Primary and Secondary level. As a Senior Leader in Maths, she led the department to raise GCSE passes by 32% in 2 years through curriculum development. PhD research harnessed Ethnomathematical methods to show the influence of artefacts from Sub-Saharan Africa on Design in Vienna in 1910.