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Learning Scenarios as Boundary Objects: A Multi-Country Study on Integrating Data Science, STEAM, and Social Justice in Teacher Education

Ana Serradó Bayés[1], Maria Meletiou-Mavrotheris[2], Dionysia Bakogianni[3], Michalis Gavrielides[4], Maria Lucia Vargas[1]
[1]Colegio La Salle-Buen Consejo (Spain), [2]European University of Cyprus (Cyprus), [3]Karlstad Universitet (Sweden), [4]English School (Cyprus)

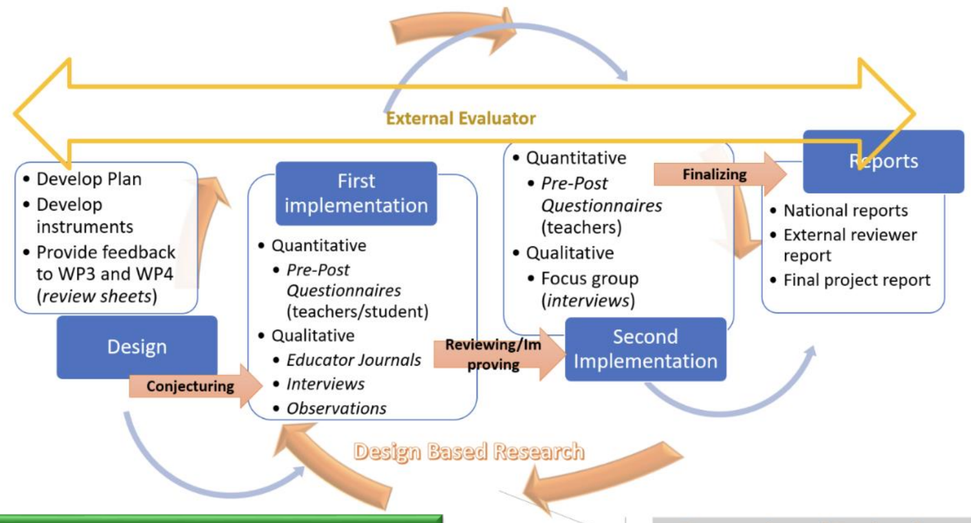
INTRODUCTION & AIM

DataScEd4CiEn
DATA SCIENCE EDUCATION IN STEAM FOR CIVIC ENGAGEMENT AND SOCIAL JUSTICE FROM THE EARLY YEARS

Drawing on the sociocultural framework of. Communities of Practice (CoP) (Lave and Wenger, 1991), this study analyses the co-design and implementation of ten learning scenarios.

The project emphasizes boundary crossing (Leung, 2020) by focusing on adaptation across diverse national settings, thereby facilitating the integration of elements within the CoP through the four phases of emergence, exploration, immersion and consolidation (Bakogianni and Potari, 2019).

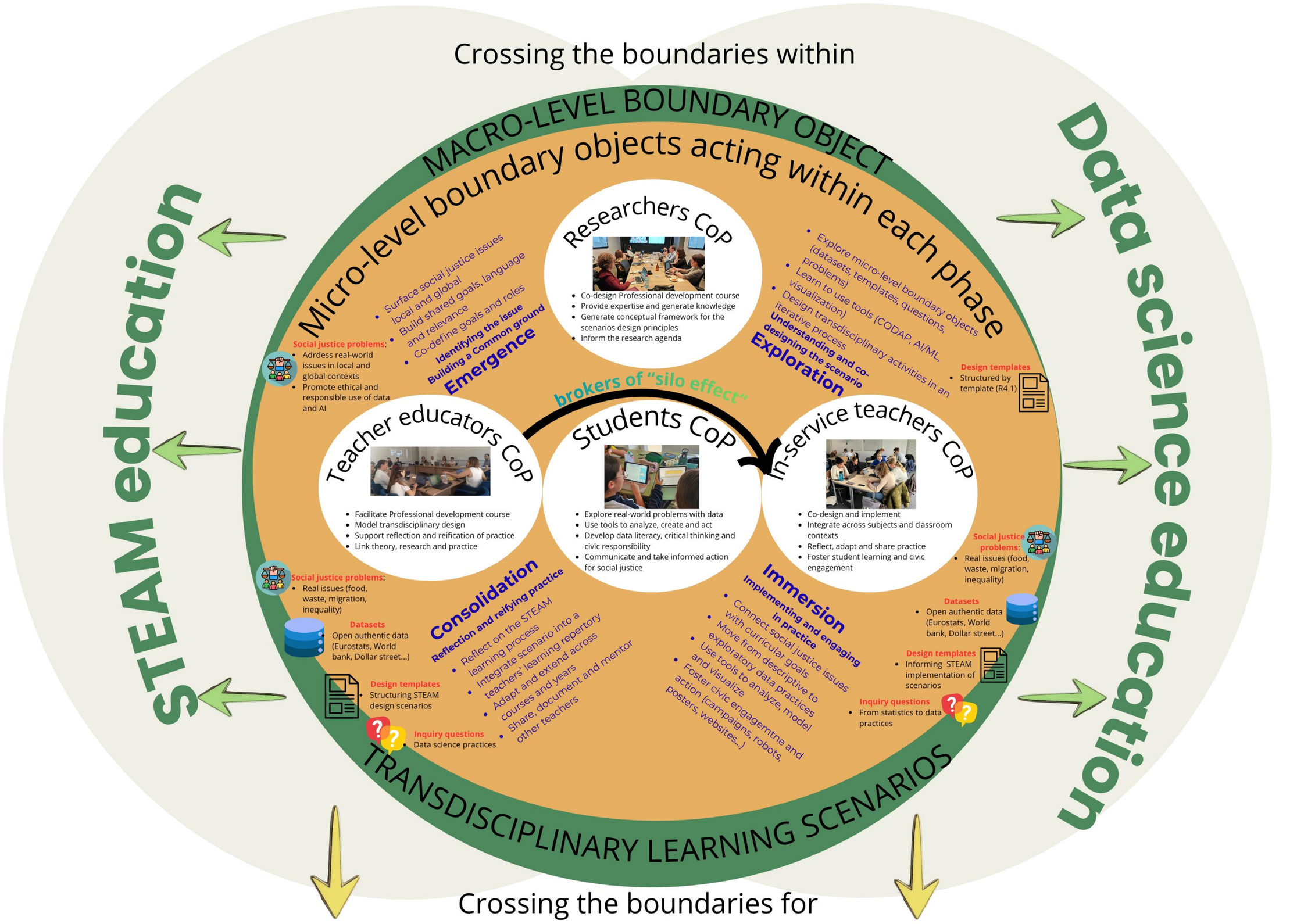
METHOD



13 researchers and teacher educators
80 in-service teachers
362 students
From:
Cyprus, Greece, Germany, Ireland, and Spain
From December 2023
To May 2026

RESULTS & DISCUSSION

How do transdisciplinary learning scenarios function as macro-level boundary objects?



CONCLUSION

These transdisciplinary learning scenarios move beyond traditional civic engagement by fostering informed responsible citizenship. Acting as macro-level boundary objects within CoP, they enable collaborative inquiry across researchers, teacher-educators, in-service teachers, and students. Supported by micro-level boundary objects, the scenarios integrate data science in STEAM education through the phases of emergence, exploration, immersion, and consolidation, supporting boundary crossing for meaningful civic action.

REFERENCES

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Leung, A. (2020). Boundary crossing pedagogy in STEM education. *International Journal of STEM Education, 7*, Artículo 15. https://doi.org/10.1186/s40594-020-00212-9