

Intersectional Gender Futures the Stemma Project: A Transdisciplinary Approach for Transformative Justice

Raffaella Monia CALIA – Sapienza University of Rome

e-mail: raffaellamonica.calia@uniroma1.it

Abstract

There is no doubt how gender bias affects all women, with a notable impact on those whose gender intersects with other categories, including, but not limited to, ethnic origin, socioeconomic status, religion, sexual orientation, and/or disability.

The intersection of categories such as gender and different abilities increases greater exposure to situations of risks, stigmatization, and discrimination, in a social system that tends to reproduce and amplify social inequalities.

The focus of the paper is an intersectional and transdisciplinary approach for Transformative Justice with a critical approach to power structures and sociocultural processes that perpetuate the social exclusion of some groups from STEM (Science, Technology, Engineering, and Mathematics) disciplines.

The paper will share the results of STEMMA¹ research project, funded by Next Generation Europe, to contribute to reducing the gap in STEM. The research will be carried out at multiple levels, with the aim of better positioning the role of the Universities and Third Sector association in the panorama of opportunities to promote social inclusion and empowerment. The proposal will highlight the inclusive value of the intersectional approach and the importance of transdisciplinarity as a device and paradigm to promote Transformative Justice, the keystone for a cohesive and sustainable society.

Keywords: *STEM, Gender, Intersectionality, Transformative Justice, Transdisciplinarity*

Introduction

The *STEMMA Project* is a transdisciplinary research initiative aimed at addressing the gender gap and accessibility challenges in STEM fields for women and individuals with visual disabilities. Funded by the Next Generation EU program, which sees the collaboration of four research units, in different disciplines, coming from the *CNR National Research Council (IT)*, *Sapienza University of Rome (IT)*², *Kore University of Enna (IT)*, *University of Pisa (IT)*, with the aim of reducing the gap in STEM disciplines, encouraging the implementation of study programs relating to gender and disabilities.

The *intersectional* and *transdisciplinary approach* favours highlighting the difficulties and obstacles, real and perceived, which can limit access – both for women and for people with visual disabilities – to training and professional paths in STEM areas. Starting from this study, the requirements and specifications are defined to guide the design of tools, digital resources and persuasive technologies capable of motivating and increasing interest and aptitude for STEM in target populations.

The main research questions investigate whether barriers are linked to gender stereotypes, lack of confidence, or accessibility and support issues for individuals with visual disabilities.

Methodological approach

¹ Science, Technology, Engineering, and Math Motivation & Accessibility

² Scientific Responsible of Sapienza University of Rome Research Unity is *Prof. Mariella Nocenzi*, coordinator of the *WP1: User study and data analysis*, of which this research is part.

The research is based on a *mixed-methods approach* and a *comparative analysis methodology*, across different territorial contexts and university and workplace environments, with the goal of analysing the research contexts in their socio-cultural, technological, digital, and economic dimensions from an integrated perspective, and defining strategies for dissemination, valorisation, and development of persuasive strategies in STEM areas.

The investigation will unfold at multiple levels, which will then be integrated, starting with the level of stakeholders, to better position the role of techno-digital transitions in the landscape of opportunities to foster social inclusion and empowerment, and the level of social, labour, cultural, and communication processes through which individuals, communities, and associations attribute meanings to STEM and structure creative practices, from a *gender and visually impaired-sensitive* perspective, with particular attention to the *Transformative Justice paradigm*.

Preliminary results and discussion

Currently, Sapienza Research Unit³, has collected data from:

- 599 respondents to the questionnaire, among university students and high school students

- 12 in-depth interviews among representative of specialist Italian Associations⁴,

in addition to the activation of networks with Italian Universities particularly with the Departments' handling disabilities, to connect mainly with blind students.

Initial analyses indicate that, while gender and visual disability are determining factors in the choice of STEM careers, there are also other variables, such as the perceived lack of educational, social and cultural support, that influence participation.

Although the data collected so far is still partial, several key insights are emerging that will guide the subsequent phases of the STEMMA project. Firstly, it is clear that psychological, cultural, and infrastructural barriers are among the most significant challenges faced by women and individuals with visual disabilities in STEM. The perception of difficulty, combined with a lack of institutional and social support, is one of the primary factors contributing to their exclusion.

The results highlight the essential but also critical role of technology. While assistive solutions are essential, it is evident that they are insufficient unless accompanied by changes in education, cultural and policy frameworks. The data suggests that the introduction of digital resources and the design of more inclusive and supportive educational pathways, with a transdisciplinary approach that involve people with visual disabilities, could significantly increase participation in STEM fields. The results will highlight the inclusive value of the intersectional approach and the importance of transdisciplinarity as a device and paradigm to promote Transformative Justice, the keystone for a cohesive and sustainable society.



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³ Composed by Mariella Nocenzi and Raffaella Monia Calia

⁴ Among them, Italian Union of the Blind and Visually Impaired (UICI), Network of association for integration of people with disabilities in Campania Region that involves NOIVED and ADAC (CIVES); Not and visually impaired - Sport Association (ADS Noived); Association for People with Disabilities in Campania (ADAC); Dehonian Movement (MDE); National Federation of Institutions for the Blind, a non-profit organisation.