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# Investigating the role of diversity and inclusion in STEM education in the UK.

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This article has contains the abstract and presentation slides which have been incorporated into a single file on this repository.

# Investigating the role of Diversity and Inclusion in STEM Education in the UK

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## Abstract

Equality Diversity and Inclusion (EDI) is a very important driver in progressing the ever-evolving fields of Science, Technology, Engineering, and Mathematics (STEM). This aspect of EDI has become increasingly prominent in the professional societies in the past years especially as women continue to be underrepresented and marginalized. This research investigates the various strategies that have been employed in the promotion of EDI in STEM education with the aim of recommending the ideal combination for girls in the UK. This study will draw on quantitative analysis of male and female secondary school students, to first and foremost uncover the root causes behind the underrepresentation of girls in STEM, some of these barriers include academic curricula that do not reflect diverse perspectives, biased or poor recruitment practices, a lack of role models etc.

We argue that diversity responsive teaching, mentorship programs, and supportive institutional policies could help bridge the lingering inclusion gap. We explore further some key initiatives from various academic institutions to identify successful approaches that have been used to improve diversity in STEM. Some of which include targeted public engagement activities, scholarship programs, and inclusive pedagogical methods that accommodate a diverse range of learning styles and cultural backgrounds. The findings of this study will provide educators and policymakers with insights and tools to help make informed decision on closing the diversity and inclusion gap in STEM education in the UK.

**Keywords:** Equality; Diversity; Gender; Inclusion; STEM

# Investigating the role of Diversity and Inclusion in STEM Education in the UK

**6<sup>th</sup> Global Conference on Education and Teaching**  
**Nice, France**

**Dr Chika Judith Abolle-Okoyeagu, Dr Chioma Onoshakpor, Dr Ambrose Okpu, Emmanuel Akerele**

# Introduction



**1** **Diverse Perspectives**  
Diverse teams bring unique backgrounds, experiences, and problem-solving approaches, leading to more innovative solutions.

**2** **Representation Matters Matters**  
Seeing role models who share their identities inspires students from underrepresented groups to pursue STEM careers.

**3** **Inclusive Environments**  
Fostering inclusive learning environments where all students feel welcome and supported boosts engagement and achievement.

# Theoretical Framework

## Social Identity Theory

Students from underrepresented backgrounds often experience a “minority status” that can influence their sense of belonging, self-esteem, and motivation

## Intersectionality Theory

Individual identities and social categories overlap, creating unique, layered experiences of advantage or disadvantage.

# Methodology and Case Selection

- Mixed-method approach: Surveys (quantitative) + In-depth interviews (qualitative).
- Draws on various studies and frameworks to build a comprehensive understanding of the current state of D&I in this field.



# Data and Results

## Gender Representation

Female enrolment in full-time undergraduate STEM courses in the UK rose from **33.6%** in 2011 to **41.4%** in 2020, reflecting initiatives to close gender gaps, particularly in fields like engineering.

## Racial and Ethnic Gaps

Black students continue to be underrepresented in STEM courses, with only around **5%** enrolled at the undergraduate level, compared to 18% of white students.

## Socioeconomic Influence

Statistics indicate that students from lower socioeconomic backgrounds in the UK have an **8.2%** lower likelihood of enrolling in higher education compared to their peers.

## Outcomes for Inclusive Programs

Schools and universities with specific (EDI) programs have seen a **15%** increase in improved retention and graduation rates for underrepresented groups.

# Addressing the Gender Gap in STEM

## STEM



1

### Early Exposure

Introducing girls to STEM subjects and role models at a young age can spark their interest and confidence.

2

### Skill-Building

Providing girls with opportunities to develop technical skills and hands-on experience can help close the gender gap.

3

### Supportive Environments

Creating safe, welcoming, and inclusive STEM learning spaces can encourage girls to persist and excel in these fields.



# Promoting Racial and Ethnic Diversity in STEM Pipelines



## Community Engagement

Partnering with local organizations and communities to raise awareness and provide STEM opportunities can widen the pipeline.



## Scholarships and Funding

Increasing access to financial support can help underrepresented students overcome economic barriers to STEM education.



## Targeted Outreach

Proactive recruitment and outreach efforts can identify and nurture talented students from diverse backgrounds.

# Strategies for Increasing Diversity and Inclusion in STEM Classrooms

## Inclusive Curriculum

Incorporating diverse perspectives, contributions, and real-world applications into STEM curricula can make it more relevant and engaging.

## Mentorship Programs

Connecting underrepresented students with successful STEM role models can provide guidance, inspiration, and a sense of belonging.

## Active Learning

Emphasizing hands-on, collaborative learning experiences can help all students, especially those from underrepresented groups, thrive.

## Teacher Training

Equipping educators with strategies to recognize and mitigate biases can foster more inclusive and supportive classroom environments.

# Collaborative Efforts and Policy Recommendations



## Stakeholder Engagement

Bringing together educators, industry leaders, and policymakers to develop comprehensive strategies for increasing diversity and inclusion.

## Policy Reform

Advocating for policies that address systemic barriers, provide funding and resources, and prioritize inclusive STEM education.

## Community Partnerships

Collaborating with local organizations, community groups, and underrepresented communities to create meaningful and sustainable change.

# Conclusion



1

## **Early Exposure**

Diversity and inclusion initiatives in UK STEM education show promise but require further institutional commitment.

2

## **Skill-Building**

Call for more targeted interventions to support minority groups in STEM

3

## **Social Identity Theory and Intersectionality Theory**

The theoretical perspectives employed highlight that challenges related to identity and compounded disadvantages significantly impact students' sense of belonging, persistence, and academic success in STEM fields

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**Thank you for listening!**



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**"Diversity in STEM is not just about bringing different voices to the table; it's about ensuring that each voice is heard and valued, leading to innovative solutions that can only arise from a rich tapestry of perspectives."**