

Revitalizing STEM Education to equip Next Generations with STEM competency in South- East Europe

Report on IO3 – INTERVIEWS – Research Activity

February 6, 2025



Report Highlights

Part 1: Introduction

Part 2: Methodology

Part 3: Results

Part 4: Conclusions

Part 5: Remarks from participants

A F I S T

Introduction

This analysis is based on 50 in-depth interviews with women from different stages of their careers in **Science, Technology, Engineering, and Mathematics** (STEM) fields, with participants categorized into **three main** groups: **students, professors, and professionals working in STEM sectors.**

The interviews were structured around several core topics, which provided valuable insights into the experiences and perspectives of the participants. These topics included:

- The career trajectories of women in STEM, highlighting the obstacles they have faced.
- The critical role that mentorship plays in shaping and guiding women's careers in STEM.
- The barriers to STEM education in Romania and potential solutions for overcoming them.
- Suggestions for how STEM education could be made more inclusive and effective for both genders, but particularly for women.

A F I S T

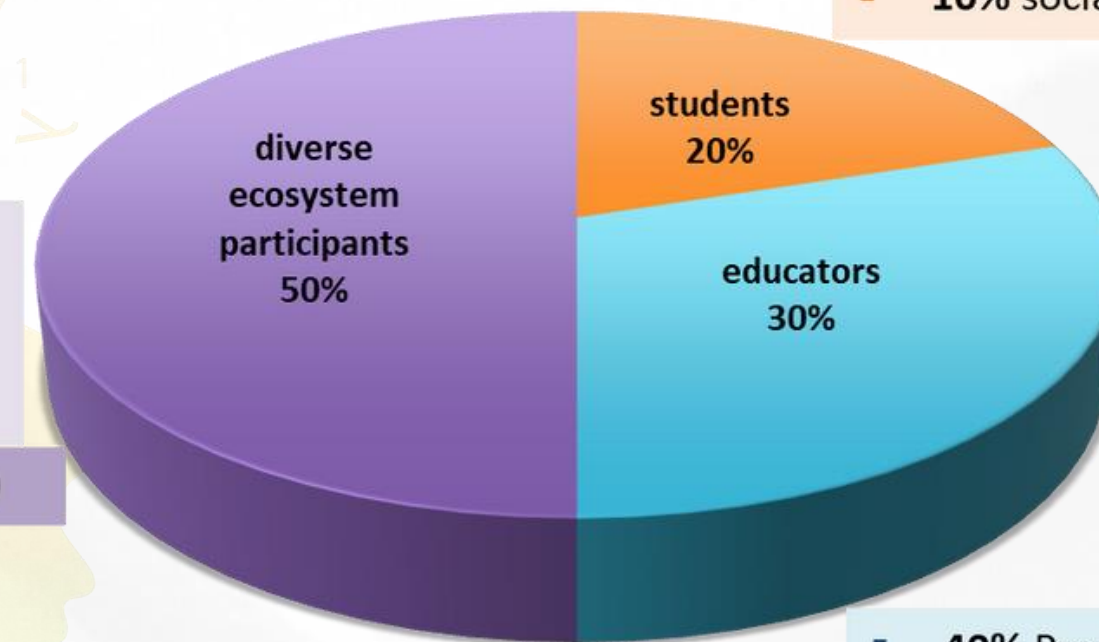
Participants profile

The participants were between **20 and 60 years old**, with varying levels of experience in STEM fields, ranging from recent students to those with over 25 years of professional experience. The breakdown of participants included 10 students (20%), 15 professors (30%), and 25 STEM professionals (50%) (researchers, engineers, entrepreneurs, and more). This distribution allowed for a broad understanding of the challenges faced at different career stages.

Participants profile

- 40% scientific researchers
- 52% technical & engineering professionals
- 8% executive leaders

▪ Age range: 32-60



- 40% engineering
- 30% science
- 20% mathematics & computer science
- 10% social sciences

▪ Age range: 20-28

- 40% Pre-university educators
- 60% University educators

▪ Age range: 28-45

- Future studies should further diversify the sample by including participants **from rural or underserved regions**, where access to STEM education is limited.
- Including women from socio-economically disadvantaged backgrounds would provide a more holistic understanding of the barriers faced by women in all areas of society.

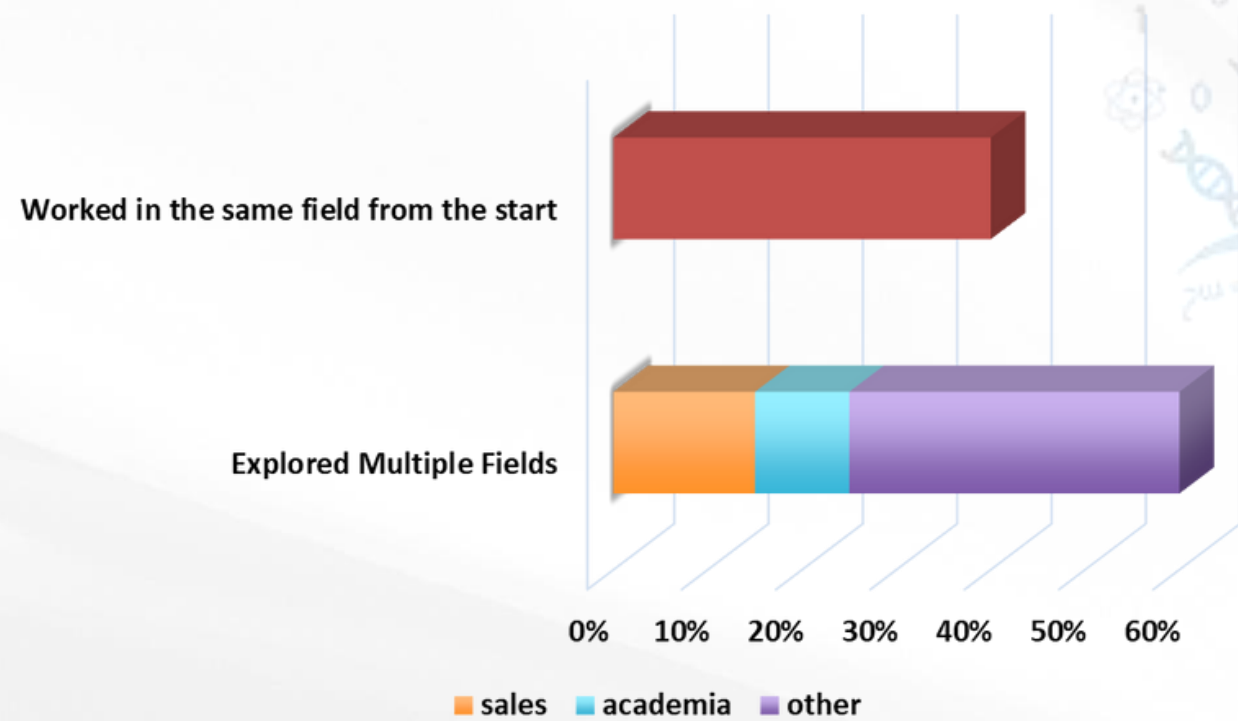
60%

of participants had explored multiple STEM fields before

40%

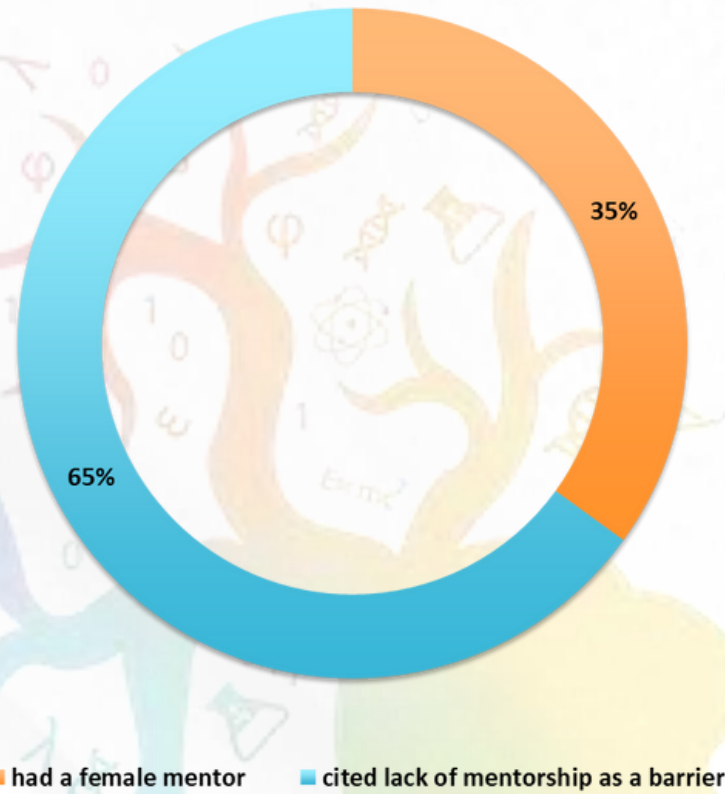
of participants had a clear focus from the beginning

Career Path



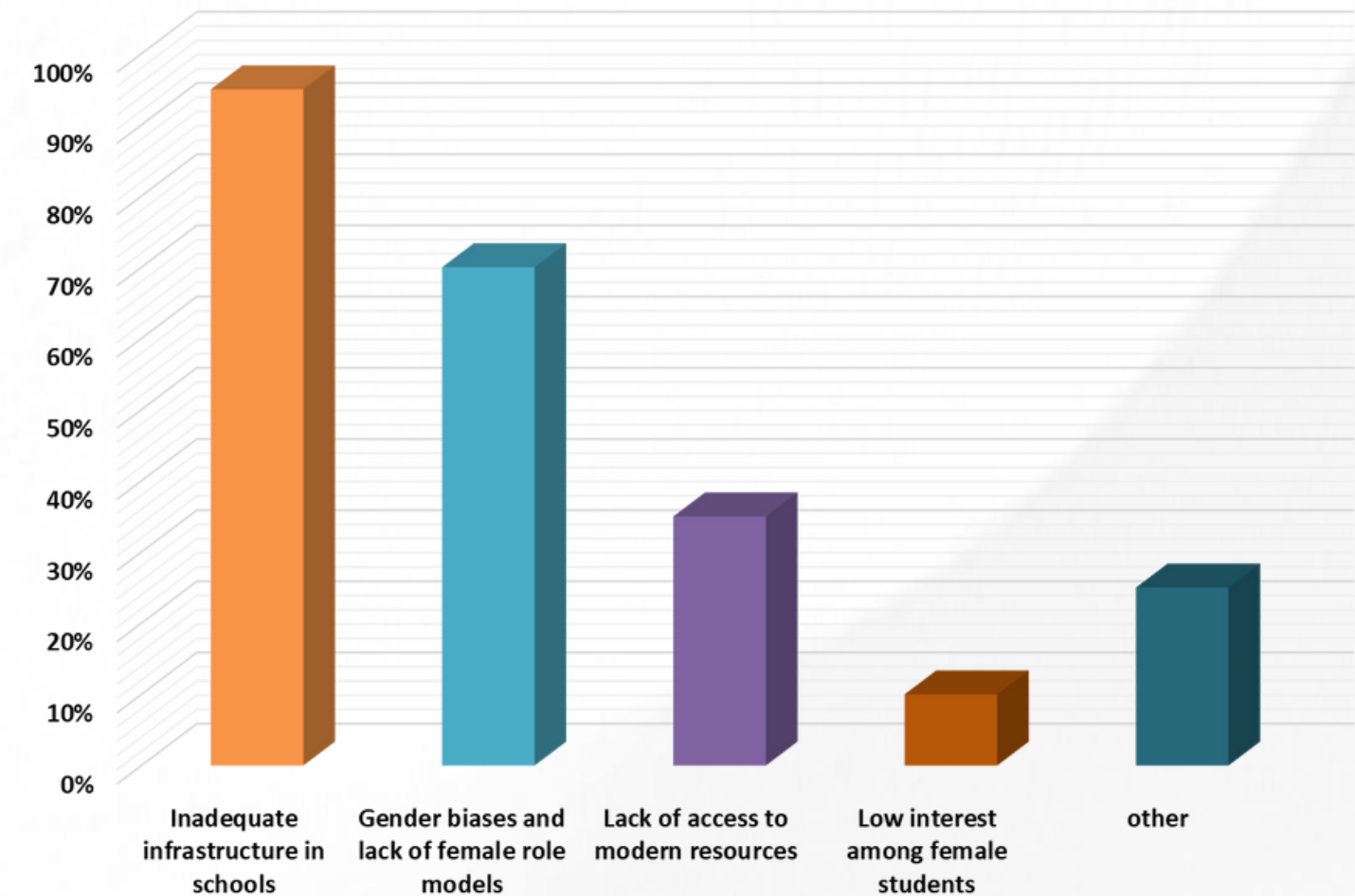
- suggests that women in STEM often experience a process of self-discovery in terms of their interests and professional identity, which contrasts with traditional expectations of early career specialization.

Role of Mentorship



- absence of mentors, especially female mentors who can relate to the specific challenges faced by women in STEM—seen as a significant obstacle.
- Many respondents emphasized that professors, particularly female ones, play a central role in nurturing the growth of STEM careers

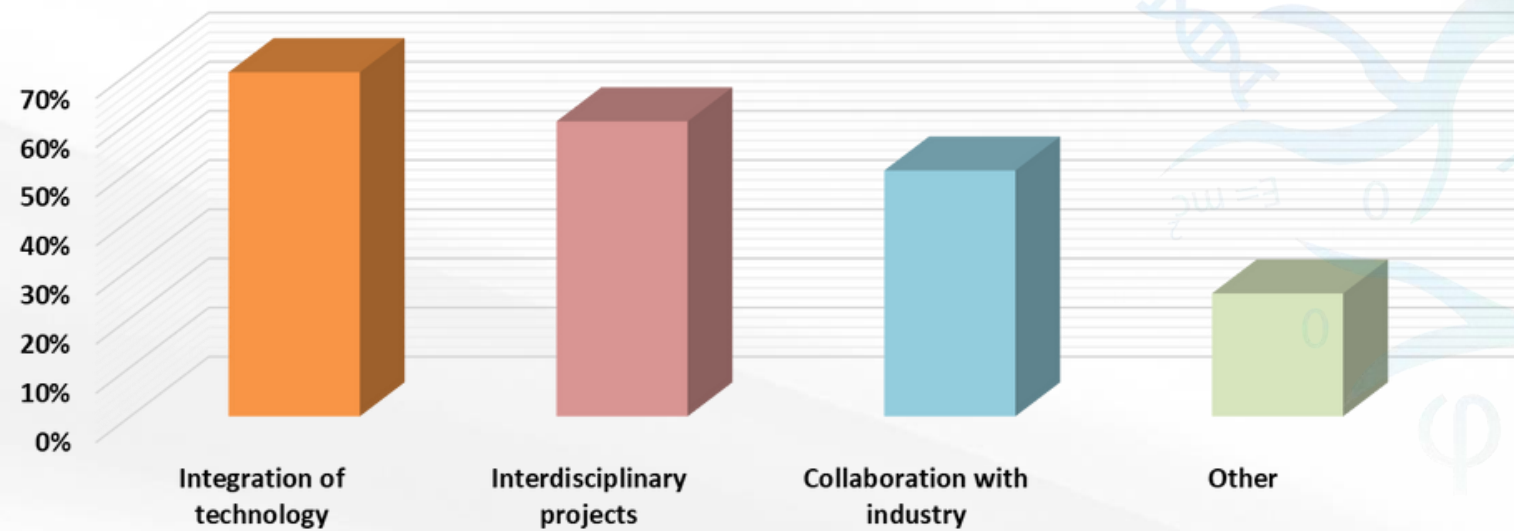
Main challenges in STEM education



- 95% of participants highlighted the lack of access to modern resources such as up-to-date equipment, labs, and teaching tools as a primary challenge.
- 10% cited low interest among female students in STEM subjects, often due to gender stereotypes or societal expectations that steer girls away from pursuing such careers.
- 35% pointed to inadequate infrastructure in schools, particularly in underfunded institutions, which creates disparities in access to quality STEM education.
- 70% of respondents noted gender biases and a lack of female role models as discouraging factors for women and girls interested in STEM.
- 25% other motivations.

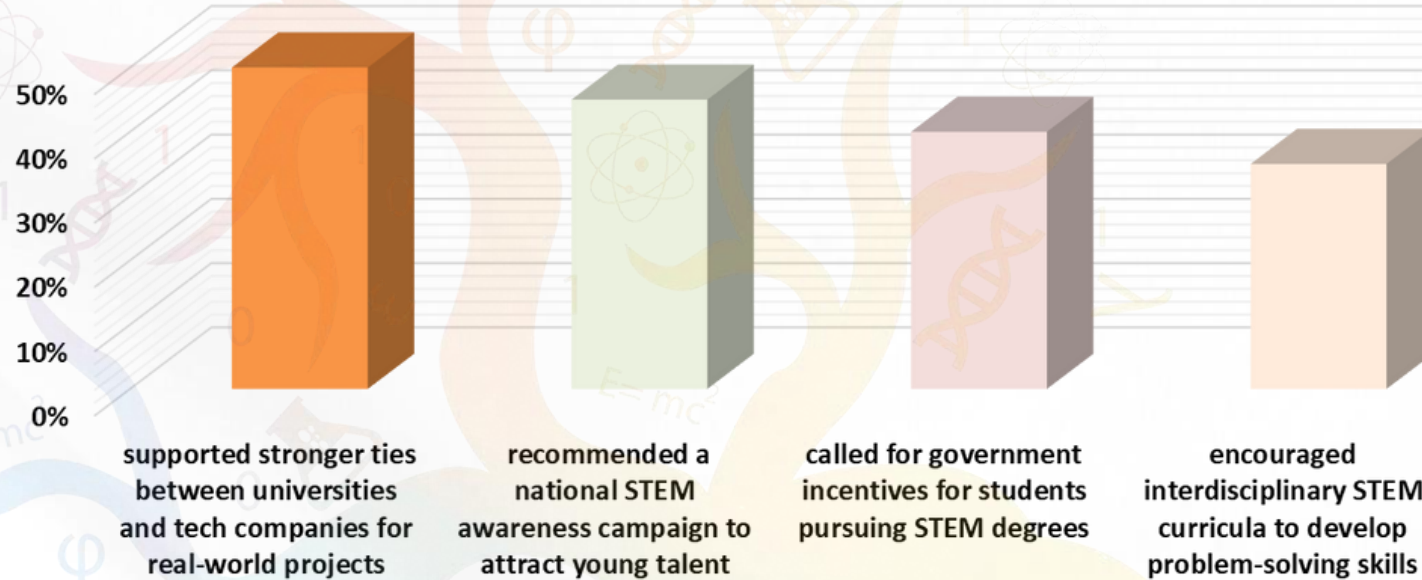
STEM education

Key factors for successful STEM education



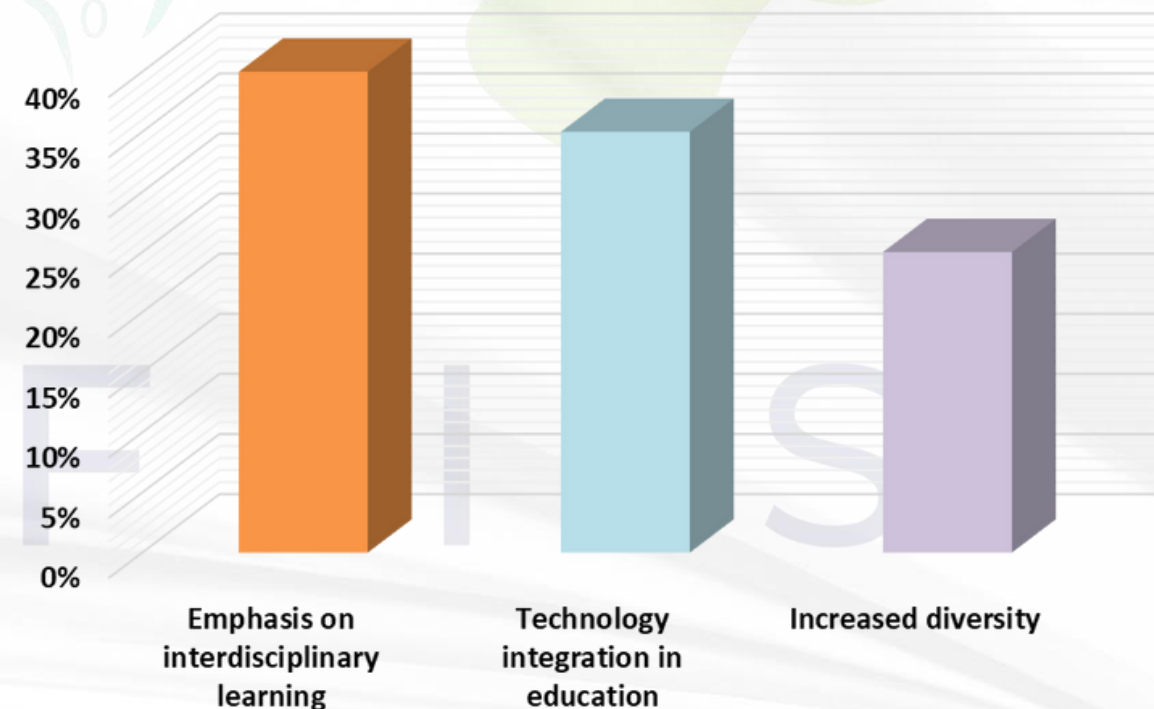
- **70%** of participants emphasized the need for **integration of technology in education** to ensure students are exposed to the latest developments in the field.
- **60%** highlighted the importance of interdisciplinary projects, which encourage collaboration and enhance problem-solving skills by integrating knowledge from various STEM domains.
- **50%** of participants stressed the significance of collaboration with industry to provide students with real-world applications of their academic learning.
- **25%** other motivation.

Key strategies to revitalize STEM education



- **50%** supported strengthening partnerships between universities and tech companies to provide students with real-world project experience.
- **45%** recommended launching a national STEM **awareness campaign** to attract more young talent to STEM fields.
- **40%** called for government scholarships for students pursuing STEM degrees to make education more accessible.
- **35%** encouraged interdisciplinary STEM curricula to develop critical problem-solving skills.

The future of STEM education

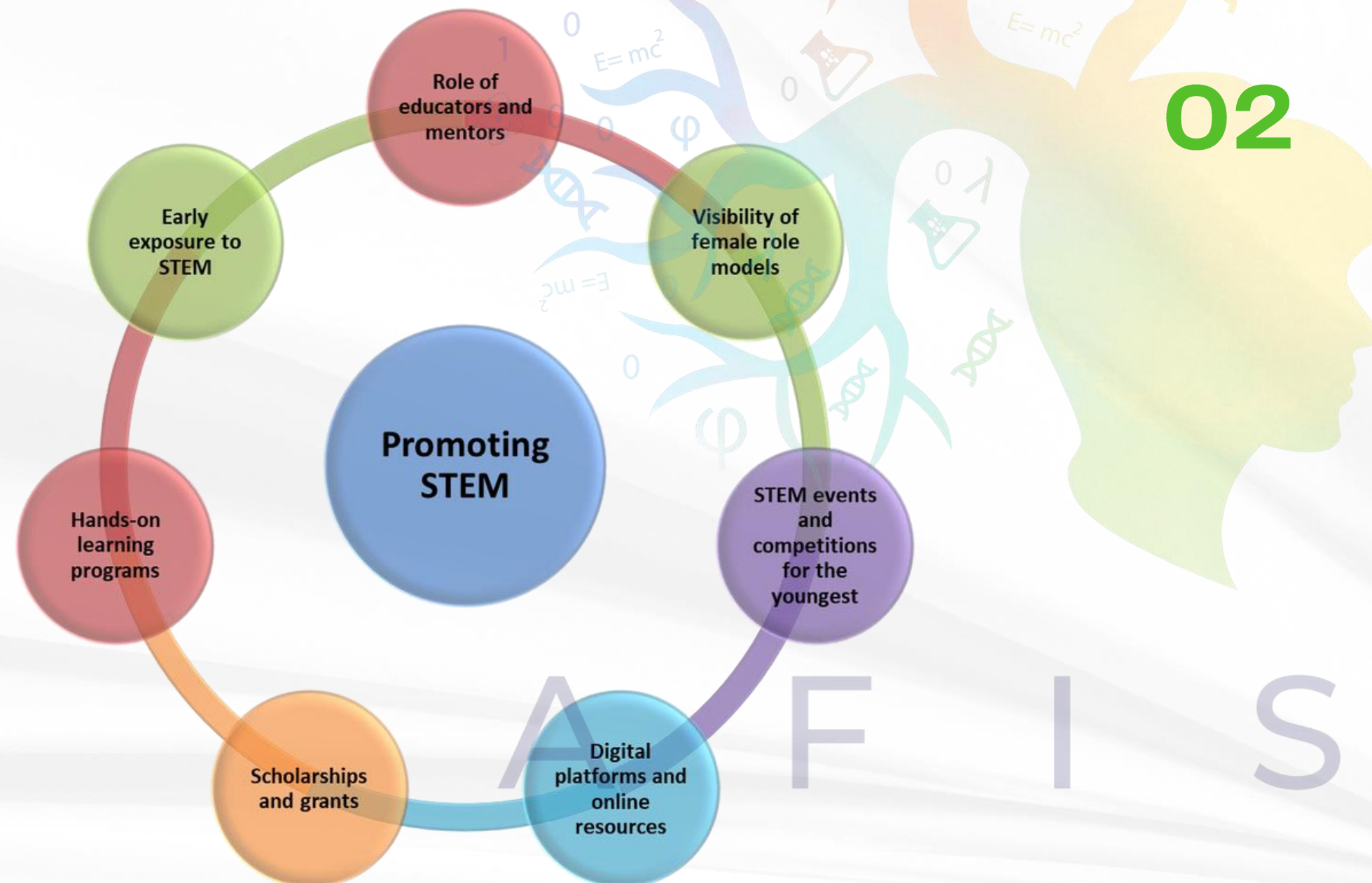


- **40%** of respondents emphasized the importance of interdisciplinary learning
- **35%** expressed the need for technology integration in education
- **25%** identified **increased diversity in STEM as a critical future goal**

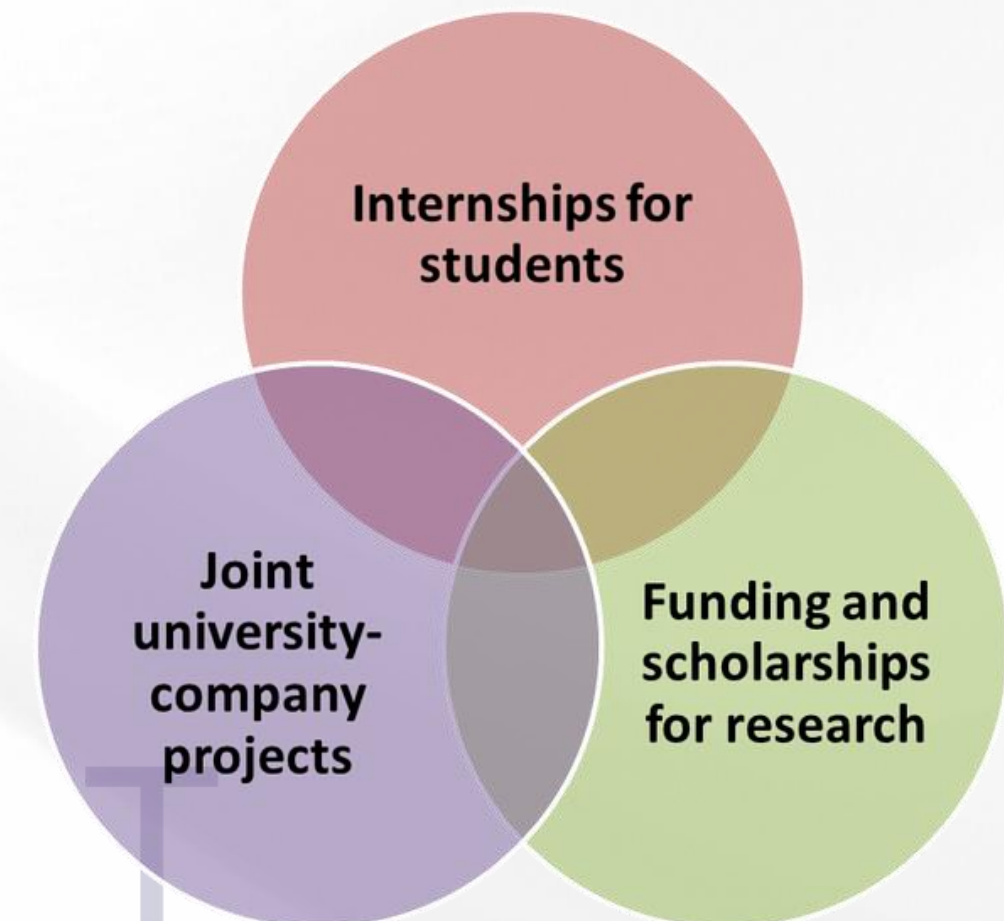
Promoting STEM & Collaboration between Academia-Industry

Governments, schools, and organizations should invest in outreach programs that showcase STEM role models, encourage young individuals to participate in STEM competitions, and provide networking opportunities for them. Organizing mentorship and professional development events focused on women in STEM could further encourage the next generation of female scientists, engineers, and innovators.

01



02

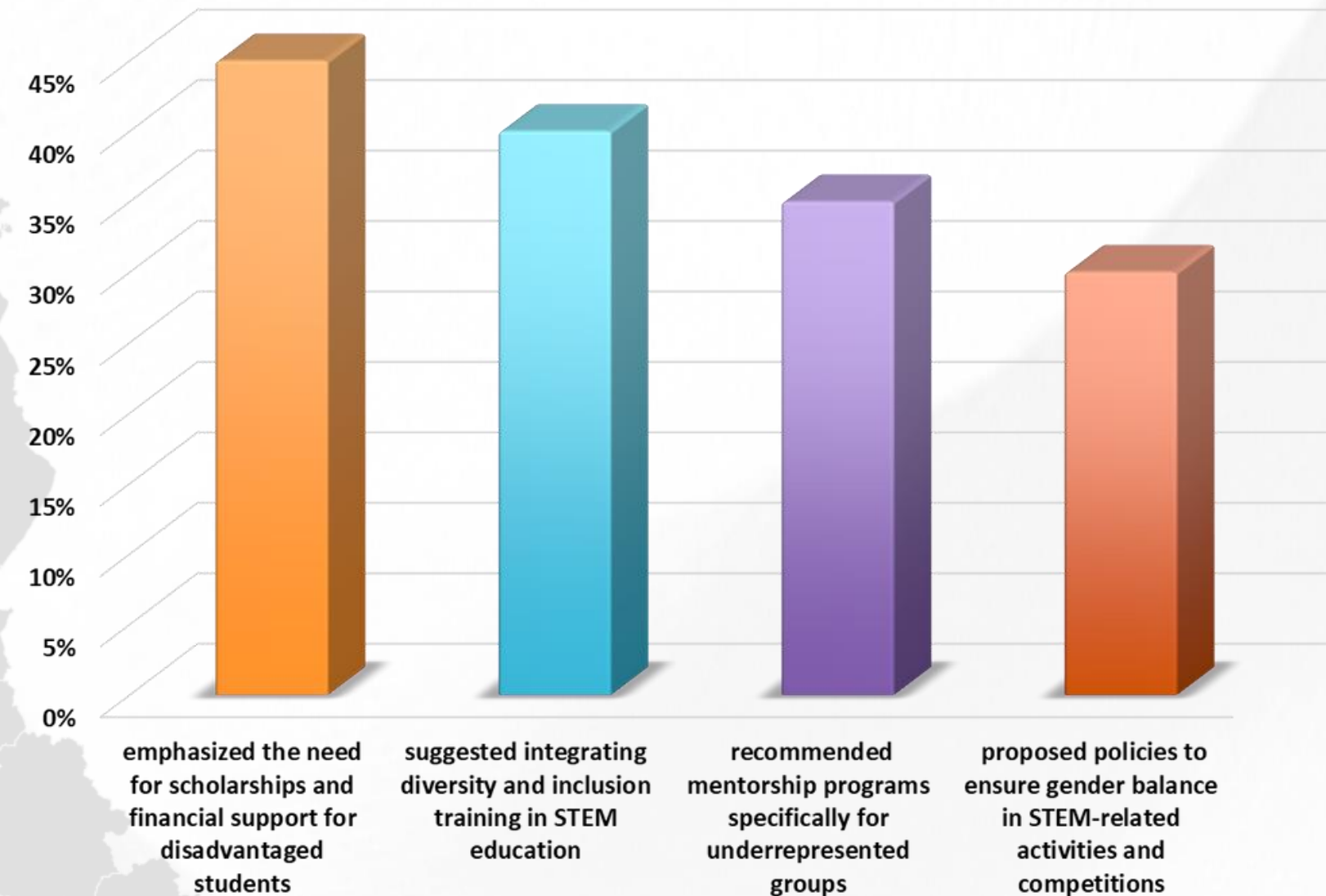


A F I S T

Romania's position in the European context for attracting multinational companies & start-ups

- Increased investment in STEM education
- Support for innovative start-ups
- Creating a STEM ecosystem attractive to multinational companies
- Developing innovation hubs, strengthening university-industry partnerships, and providing incentives for companies to invest in local talent
- Enhancing research and development (R&D)
- Improving STEM career visibility: Promoting success stories of Romanian scientists, engineers, and tech entrepreneurs globally.

Inclusive STEM learning environments



- **45%** emphasized the need for scholarships and financial support for disadvantaged students
- **40%** suggested integrating diversity and inclusion training into STEM curricula
- **35%** recommended mentorship programs for underrepresented groups
- **30%** proposed policies to ensure gender balance in STEM-related activities and competitions, promoting equality.

Conclusions

This study highlights critical insights into the challenges and opportunities women face in STEM education and careers in Romania. Through in-depth interviews with students, professors, and professionals in the field, several key themes emerged that can guide future efforts to improve STEM education and promote gender equity.

Mentorship is crucial

The lack of mentors is a major barrier to women's professional development in STEM.

Persistent challenges

Gender biases, inadequate infrastructure, and the lack of female role models limit inclusivity in STEM.

Systemic barriers slow progress

While women feel confident in STEM, societal norms and biases still limit opportunities.

Role models matter

The visibility of successful women in STEM inspires young women to pursue these careers.

Modernizing education

Improving infrastructure, integrating technology, and fostering interdisciplinary learning are key priorities.

Policy and investment are essential

Addressing mentorship, gender balance, and infrastructure can build a more inclusive STEM ecosystem.

Few remarks from participants

Anita Visan
Researcher



“I hope that the future of STEM education in Romania will be marked by a deeper integration of technology in classrooms and a shift towards project-based and experiential learning. These approaches will foster a more dynamic and interactive educational environment, tailored to the current needs of students while enhancing their critical thinking and creativity.”

Corina Mutu
Technical Project Management



“I believe that one of the problematic aspects is that STEM education, both in Romania and at the European level, continues to face gender stereotypes and biases. There is still a prevailing misconception that individuals of the female gender cannot perform well in these fields, which directly impacts employment rates. Romania continues to experience a shortage of workers in STEM fields. I believe that efforts to integrate women into STEM should be intensified, not only through targeted actions but also by emphasizing equal opportunities and equality in performance.”

Sabina State
Researcher & Univ. Lecturer



“Disparities between urban and rural areas contribute to unequal access to education. Additionally, the insufficient promotion of the attractiveness of STEM fields reduces young people's interest, despite the potential of these careers. Another issue is the lack of awareness regarding the diversity of jobs available after completing a STEM educational path.”

Lorena-Larisa-Gabriela Adam
Master's student at the Faculty of
Medical Engineering, University
Politehnica of Bucharest



“The community can support by creating local initiatives that bring STEM closer to young people. Collaboration between schools, companies, and NGOs can facilitate access to resources, internships, or educational events. Science fairs allow students to present their projects and interact with professionals in the field.”