HOLTA HEBA

Mediterranean University of Albania

holtaheba@umsh.edu.al
ORCID: 0000-0001-6849-9862
DOI: 10.13166/awsge/210726

ALBANIAN WOMEN IN STEM: EMPOWERING HUMAN RIGHTS THROUGH COMMUNICATION

WSGE UNIVERSITY OF APPLIED SCIENCES IN JÓZEFÓW PUBLISHING HOUSE

Abstract

In the next decade, professions within Science, Technology, Engineering, and Mathematics (STEM) are expected to grow significantly. Yet, across Europe, and especially in Albania, a notable gender gap persists – particularly in Information and Communication Technology (ICT). This study explores how strategic communication can serve as a catalyst for change, empowering Albanian women to pursue and thrive in STEM careers and, in doing so, advancing gender equality and human rights.

Purpose of the study: Through a critical review of the representation of women in STEM, this study aims to identify effective mechanisms that encourage their active participation in these fields. Central to this approach is the use of communication as a transformative tool to challenge stereotypes and foster an inclusive environment.

Research shows that achieving gender parity in STEM education by 2050 could result in over 1.2 million new jobs and contribute between €610–820 billion to Europe's GDP.

Research question: What are the communication-based and structural mechanisms that can reduce the underrepresentation of women in STEM in Albania and promote equity?

Hypothesis: To meet the challenges of the 21st-century knowledge economy, it is essential to eliminate gender, cultural, and social barriers, while empowering girls through inclusive communication, education, and supportive policies that enable more women to enter and remain in the STEM workforce.

Keywords: *gender equality, communication, social norms, education, women in STEM, empowerment, human rights*

1. INTRODUCTION

Science, Technology, Engineering, and Mathematics (STEM) are essential pillars that drive a country's development and global competitiveness. Drawing from international experience, countries like the United States have long recognized the strategic importance of investing in these fields, particularly through policies aimed at increasing women's participation. Despite such efforts – across national academies, education systems, and public policies – gender

imbalance remains deeply entrenched. The number of men employed in STEM careers continues to surpass that of women, a trend observed not only in the U.S. and Europe but especially evident in Albania.

This study applies a critical review methodology to explore the underrepresentation of Albanian women in STEM and identify mechanisms – especially communication-based – that can reverse this trend. It seeks to answer: How can communication be used to dismantle social and cultural barriers and empower Albanian women to pursue and thrive in STEM fields?

At the heart of this challenge lies a broader societal responsibility. Families, educational institutions, and communities must collaborate to build supportive environments that challenge harmful stereotypes about women's abilities in technically demanding professions. Communication plays a key role – by fostering confidence in girls' scientific potential, we spark greater interest and ambition. The academic and professional advancement of women should be a central axis in any national development strategy, especially in the 21st century where access to STEM education is vital for economic equity and innovation.

Gender disparities in STEM remain stark. While enrollment rates in higher education are nearly equal across genders, the gap widens when it comes to graduation and career selection in STEM fields. Fewer women pursue or remain in these disciplines, a global trend that reflects not a lack of ability, but a lack of support, encouragement, and inclusive messaging.

In Albania, the issue is compounded by persistent cultural mindsets that assign *easier* or more *feminine* professions to women, leaving fields like engineering, mathematics, and technology overwhelmingly male-dominated. These views are reinforced through everyday communication – from family expectations to school guidance – and ultimately discourage women from entering or advancing in STEM careers.

Although the number of women in science and engineering is slowly increasing, they remain significantly underrepresented at senior levels. This imbalance reflects deeper systemic barriers that must be addressed – not only through policy, but through the language, stories, and values we share as a society.

2. THEORETICAL RELATIONSHIP

According to some researches, it has been observed that there is a kind of negative stereotype that boys are more capable than girls in the subjects of exact sciences, especially in mathematics. This is how the idea was formed that girls stay closer to subjects of a social nature. This negative stereotype is taught from elementary school. *Mathematics is associated with the male category, while reading is associated with the female category* (Kahn, S & Ginther, D, 2017, page 10).

In fact, to be prepared for professions in STEM, you must have good skills in mathematics and if until yesterday it was thought that boys were more capable in this field, today it is being noticed that there is an increase in the number of girls, which, like the boys, are doing quite well in this subject.

Many communication researchers believe that how is the importance of being able and why not future professionals in science, technology, engineering and mathematics communicated to girls, is very important. If teachers and family members tell girls that they are equally capable in the STEM areas, then most likely their interest in increasing performance in these extents will be very high. If it is explained to these girls from the beginning of their studies how important their participation in these professions is for individual and country development, then their interest will definitely be much higher. If it is explained to these girls that mathematics or technology is as accessible as the fine arts for a woman, then their performance in these fields will be higher. If it is explained to these girls in education that they are capable of improving their achievements in technology, engineering and mathematics, then the mindset that these professions are for men can disappear.

Everyone needs to do their part, starting with seemingly small things to achieve the BIG change: attracting and retaining women in STEM.

Attracting women in the professions of technology, engineering and mathematics is the product of a chain, which has its starting point from the recruitment of female students in colleges and universities to the employment strategies pursued by a certain government. According to some studies, it has been observed that it is enough for the departments of these fields

to make some very small changes by offering special courses and explaining their importance in future professions. If female integrity is promoted, these departments will find it much easier to recruit female students. Regarding their continuation in the profession, after years of studies of these areas, the level of women's dissatisfaction in the workplace in these fields should also decrease, these policies should be followed and implemented by the leadership of a country and every private or state institution. College and university leaders must offer the best and closest curriculum to the labor market, but they must also employ STEM women who contribute by mentoring them in terms of the effective policies they have pursued throughout their careers. The experience of women in STEM should be conveyed to female students, thus contributing to strengthening the idea that the latter have made the right choice in terms of their future profession. Many studies regarding the representation of women in STEM have concluded that there is a significant gender gap in STEM academic fields. (Bent-ley & Adamson, 2003; Nelson & Rogers, n.d.; Ginther & Kahn, 2006).

Several studies have found a gender difference in employment in academic STEM disciplines (Ginther & Kahn, 2017). Although women are very easily hired in STEM faculties, it is apparently not enough. It is not enough just to have a STEM degree, but required also is the increase on the job satisfaction. At Harvard University, it was found that STEM women in faculty, express lower job satisfaction than men. And when there is dissatisfaction at work, the talent and desire to increase the number of women in STEM continues to wither. The policies to be implemented in such cases not only at Harvard University, but also in all faculties related to STEM, should be very effective in order to help improve women's job satisfaction, pushing the latter to stay in that profession, but at the same time to contribute with the distribution of their experience to the students of these same faculties.

Based on nationwide studies, it is clear that the low number of women who are employed in STEM is far less than that of men. Many researchers believe that it is a worldwide phenomenon. (Burke & Mattis, 2007; Ceci & Williams, 2011; Ceci, Williams, & Barnett, 2009; Cheryan, Ziegler, Montoya, & Jiang, 2017).

There have been ongoing efforts by many US and European politicians to understand the underrepresentation of women in STEM, yet the fundamental change originates and perpetuates gender differences.

In Albania, about 55 percent of leadership positions in the field of Communication and Information Technology are women. Within the *Schools for the 21st Century* program, the British Council has developed a guide and series of activities to help primary schools set up Coding Club as an extracurricular activity. This program is attended equally by girls and boys.

3. ANALYZING THE UNDERREPRESENTATION OF ALBANIAN WOMEN IN STEM: A COMMUNICATION AND HUMAN RIGHTS PERSPECTIVE

In Albania, significant gender disparities persist across undergraduate, graduate, and doctoral levels in STEM fields. While many young Albanian women pursue higher education, their representation in disciplines like engineering, information technology, and applied sciences remains disproportionately low. Instead, most female students gravitate toward educational sciences, health, and humanities – choices often shaped by social expectations rather than personal interest or aptitude.

Cultural and gender norms continue to define certain professions as more *suitable* for women, reinforcing the stereotype that STEM careers are overly difficult or incompatible with traditional female roles. This mindset is especially prevalent in rural areas, where women are often expected to prioritize family responsibilities over professional ambitions. Such norms are communicated implicitly and explicitly through family, schooling, media, and community interactions – limiting girls' perceptions of what careers they can or should pursue.

Yet statistics suggest that this underrepresentation is not due to a lack of ability. On the contrary, girls in Albania consistently perform well in mathematics and science during high school. For example, state exam results

in mathematics from 2022 showed that girls achieved high scores, challenging the notion that technical subjects are better suited for boys. The issue is not capacity – it is communication. The way society talks about women's roles, capabilities, and options plays a defining role in shaping career aspirations.

Data from INSTAT (2019–2020) highlights the gendered distribution of university degrees: while both men and women dominate in business, women favor fields like health, education, and the arts, whereas men lead in engineering and technology. Notably, women hold over 50% of leadership positions in Communication and Information Technology – a promising sign that contradicts the stereotype of women avoiding technical leadership. However, this success must be amplified and better communicated to challenge the broader cultural narrative.

Gender inequality is also stark in Albania's labor market. Despite women often being more educated, they are underrepresented in high-paying technical fields and overrepresented in lower-paying or caregiving roles. Social expectations that women stay closer to the home or choose *easier* professions continue to shape career decisions from an early age. In more gender-equal societies, women's representation in STEM is notably higher – highlighting the importance of cultural messaging and public policies that support gender parity.

Encouragingly, during the COVID-19 pandemic, women's participation and compensation in STEM-related fields such as Information and Communication Technology increased. This shows that when opportunities align with demand and when barriers are temporarily lifted, women rise to the challenge. However, this momentum must be sustained through intentional and inclusive communication – starting from schools and families and extending to national policies and media narratives.

Communication, in this context, is not just a support mechanism – it is a human rights tool. It affirms that women have the right to equal opportunities, access to information, and participation in the technological and scientific shaping of their country. By transforming how we communicate expectations, career paths, and role models, Albania can unlock the full potential of its female population in STEM and ensure a more inclusive future.

5. CONCLUSION

The underrepresentation of Albanian women in STEM is not merely a statistical imbalance – it is a reflection of deep-rooted social, cultural, and communicative barriers that restrict their full participation in nation-building fields. This study has shown that while women possess the talent, performance, and leadership potential to thrive in STEM, systemic obstacles – especially those conveyed through communication – continue to hinder their access and advancement.

To close this gap, Albania must approach gender inclusion in STEM as both a developmental necessity and a human rights imperative. Effective communication must be at the heart of this change: from classrooms that encourage girls in science and mathematics, to media that showcases female role models in technology, and public policies that affirm equal opportunity.

Several key mechanisms have emerged:

- Challenging stereotypes through inclusive messaging and early education
- Promoting visibility and mentorship of women in STEM
- Aligning labor market policies with gender equity goals
- Fostering a national culture where communication affirms equality and potential

When families, educators, policymakers, and the media coordinate their messages, they can collectively empower girls to see themselves as future engineers, scientists, and technologists. This coordinated communication is not just about awareness – it is about transformation.

In the 21st century, Albania's economic competitiveness, innovation capacity, and social justice depend on the active inclusion of women in STEM. Empowering them through strategic communication ensures not only professional equality but also strengthens the democratic and human rights fabric of the country.

References

INSTAT. (2020). Gender Equality Index for the Republic of Albania 2020, available at: http://www.instat.gov.al/media/6661/gender_equality_index_for_the_republic_of_albania_2020.pdf

INSTAT. (2021). Women and Men in Albania, 2021, available at: http://www.instat.gov.al/al/temat/treguesit-demografik%C3%AB-dhe-social%C3%AB/barazia-gjinore/publikimet/2021/grat%C3%AB-dhe-burrat-n%C3%AB-shqip%C3%ABri-2021/

Hill, C., Corbett, C., & St. Rose, A. (2010). Why So Few? Women in Science, Technology, Engineering, and Mathematics. Washington, D.C.: American Association of University Women.

Jiang, X. (2020). Women in STEM: Ability, Preference and Value, Ohio State University, available at: https://sites.google.com/site/gabixuanjiang/research

Kahn, S & Ginther, D, 2017. Women in STEM National bureau of economic research 1050Massachusetts Avenue Cambridge, MA 02138, available at: https://www.nber.org/system/files/working_papers/w23525/w23525.pdf

https://www.researchgate.net/publication/24170511_Women's_Underrepresentation_in_Science_Sociocultural_and_Biological_Considerations

https://hbr.org/2016/08/why-do-so-many-women-who-study-engineering-leave-the-field