

Role of Women in Science & Technology

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Abstract:

Science and technology play an extremely important role in the contemporary society. Government in developed and developing countries recognize the importance of the development of **Science & Technology** sphere. The roles of women have changed dramatically in the contemporary society. Women have got more freedom to express themselves and take active part in the development of technologies, despite the fact that there are still problems in this sphere.

Despite efforts to give women greater access to education in science and technology in some countries, the research shows they are still significantly under-represented in many degree programs, especially in engineering, physics and computer science. But even with improved access to science and technology education.

At the present moment all over the world, with small exceptions, women take an active social role and demonstrate their abilities in a lot of spheres. Nowadays women are active in good production industry, natural-resources management, educational sphere, community management. The growing temps of technological development and popularity of feminism, women do not still possess equal position in the society. "Although women and girls make up approximately 50 per cent of the global population, they have access to much less than half of the resources in terms of technology, financing, land, training and education, and information"

"UNESCO figures reveal that in 121 countries with available data, women comprise 29 percent of researchers but there were big disparities among regions.

Gender equality and normal work conditions for both, men and women are the characteristics of any normal society and it is necessary to pay attention to the problem of gender inequality in science and technology because this can be beneficial for the development of these spheres.

Keywords: Contemporary, Feminism, Gender Inequality, Sphere, Contemporary.

Introduction

The era of globalization and rapid technological development has changed people's lives dramatically. Science and technology play an extremely important role in the contemporary society. Government in developed and developing countries recognize the importance of the development of S&T sphere. The roles of men and women have changed dramatically in the contemporary society. Women have got more freedom to express themselves and take active

part in the development of technologies, despite the fact that there are still problems in this sphere. As stated in the report by the United Nations(2011) called *Applying a Gender Lens to Science, Technology and Innovation*, : “There is also need for recognition of the importance of applying a “gender lens” to STI for development. Indeed, STI policies and programmes will not be effective, equitable and sustainable unless the gender lens is applied so as to reflect the aims, concerns, situation and abilities of both women and men”. People realize the gender equality is one of the components of healthy society and true development is impossible without it. Only understanding of contribution women can make to the development of science and technology can bring positive impact on the development of this sphere.

Despite the growing temps of technological development and popularity of feminism, women do not still possess equal position in the society. “Although women and girls make up approximately 50 per cent of the global population, they have access to much less than half of the resources in terms of technology, financing, land, training and education, and information”.The gender lens would be an essential contribution to the development of STI sphere and would enable people to meet the global changes. “UNESCO figures reveal that in 121 countries with available data, women comprise 29 percent of researchers but there were big disparities among regions.

In Asia, women constitute only 18 percent of researchers overall. India and Japan have 13 percent female researchers and South Korea has 15 percent. In Africa women comprised about 33 percent of researchers” (UNESCO 2009). These numbers show that women’s participation in STI is very low. Even in the countries with comparatively high rates, women’s participation does not make even 50 per cent. These results show that gender inequality still exists in this sphere and it is necessary to pay scrupulous attention to this problem.

The history shows a lot of examples of great input made by women to the development of STI. It is hard to overestimate the role of women in the development of different sphere. Scientific and industrial field, as well as other technological industries are influenced and dominated by men.

Women Empowerment

Women’s empowerment is a process in which women gain greater share of control over resources material, human and intellectual like knowledge, information, ideas and financial resources like money and access to money and control over decision-making in the home, community, society, nation, and to gain power. According to Cambridge English Dictionary empowerment means to authorize. In the context of the people they have to be authorized to have control over their lives. When applied in the context of development the particular segment of population, the poor, the women, the vulnerable, the weak, the oppressed and the discriminated have to be empowered to have control over their lives to better their socio-economic and political conditions.

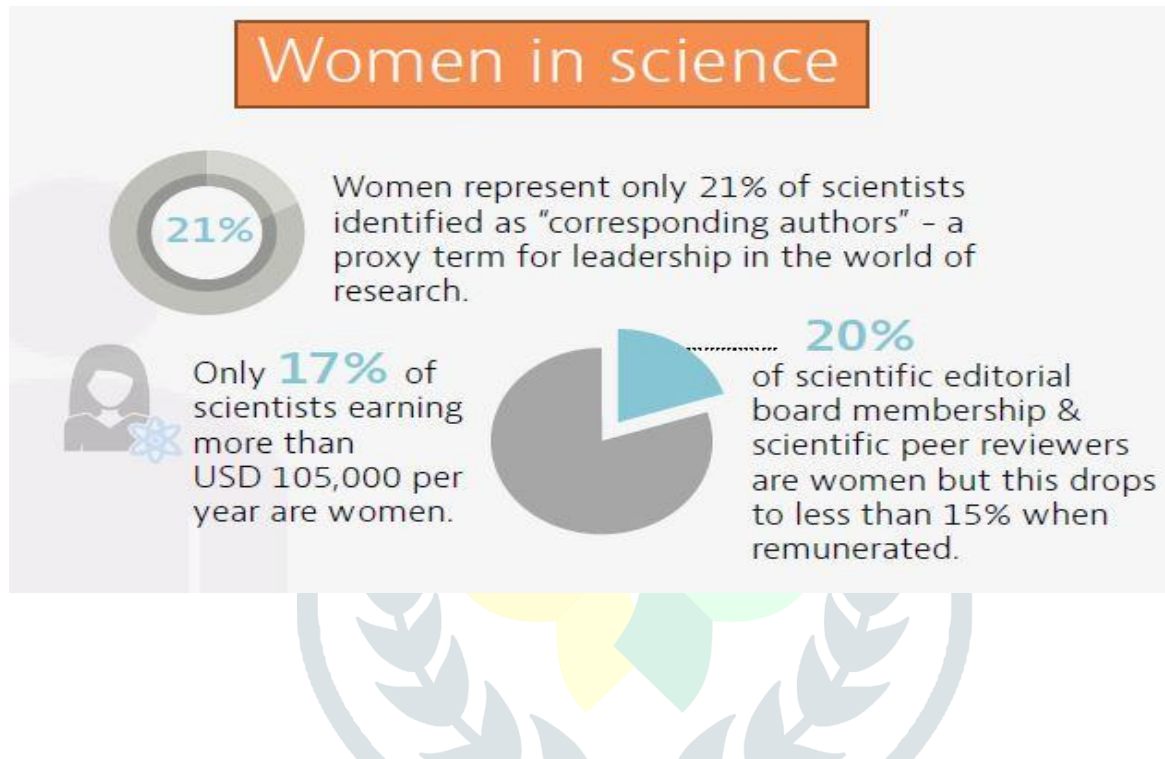
Women can be empowered only if they are given education and made aware of their rights and hence they themselves prioritize their lives.

Surprisingly, the empowerment of women is one of the central issues in the process of development of countries all over the world. In 1975, the first UN Conference of Women and

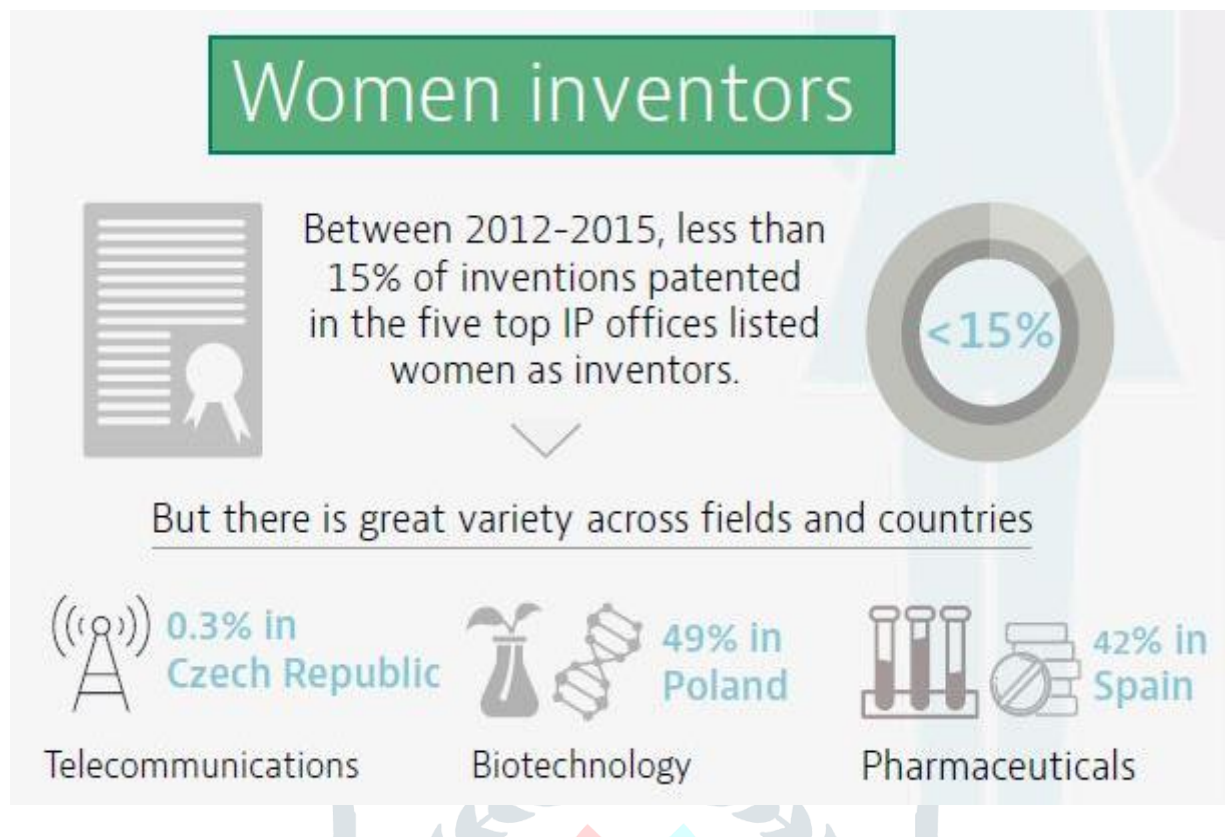
Development was held at Mexico under the motto, Equality, Development and Peace. The need to integrate women into development was internationally proclaimed in the 1995 Beijing Conference.

Experimental indicators

It shows that today only 21% of scientists who are identified as “corresponding authors” - a proxy term for leadership in the world of research - are women, while an astonishing 86% of remunerated editorial board members of scientific journals are male fig(1).

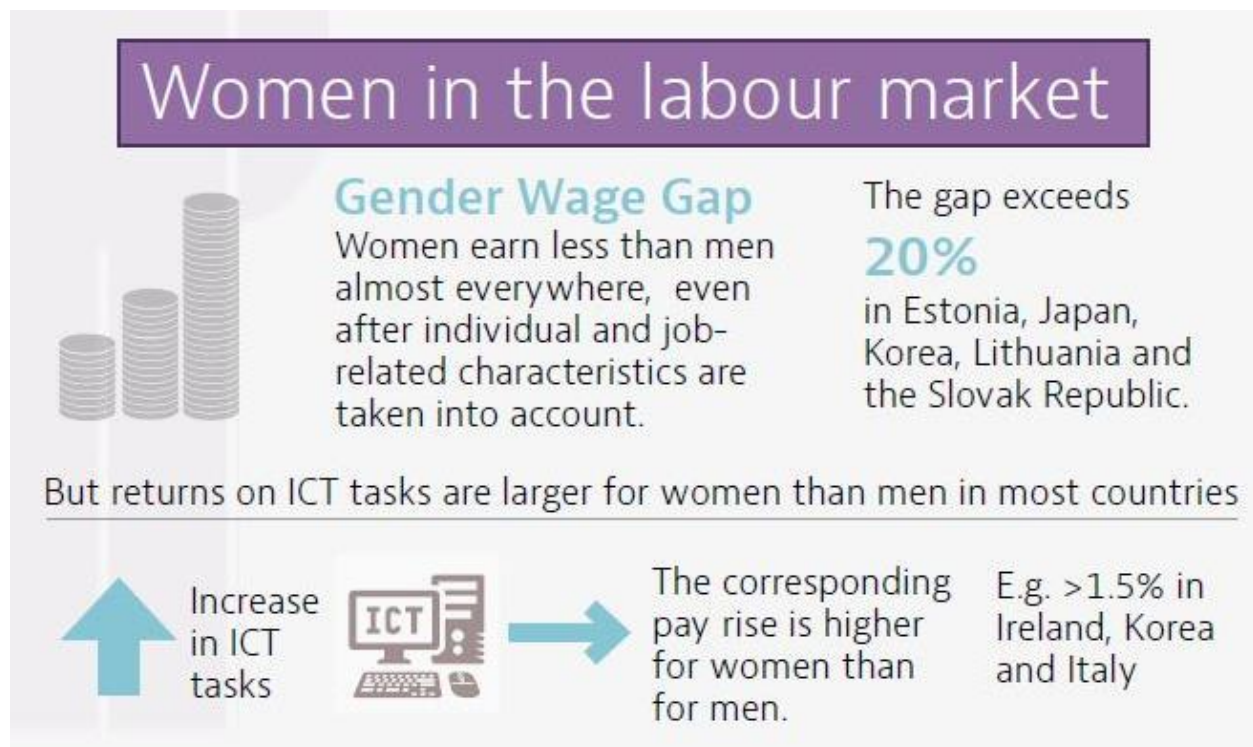


The development of new technologies may no longer be considered a “man’s world”, if it ever really was. Women have invented everything from windshield wipers (Mary Anderson received the patent in 1903), to life-saving Kevlar (thanks to chemist Stephanie Kwolek) and the programming language COBOL (with Grace Hopper introducing the idea that computer programs should be written in a language close to English). One way to investigate the contributions of women to innovation is to look at the proportion of patents featuring women inventors. Here, while it varies across countries (between 2012-15, we see figures ranging from about 4% in Austria, to 7% in Japan, 10% in the United States and over 15% in Portugal), we already see sizeable contributions in certain technology fields (women inventors feature in 42% of patented inventions in pharmaceuticals in Spain, and 49% of biotechnology patents in Poland) (fig 2).



Fig(2)

While narrowing, however, a gap in wages persists: even after individual and job-related characteristics are taken into consideration, women earn 4 to 29% less than men (in a sample including most OECD countries). And the scientific community is not an exception: only 17% of those scientists earning more than 105 000 USD are women. However, our analysis shows that when women undertake more ICT-intensive tasks in their job, the related pay increase is higher for them than it is for men in almost all countries (the premium is up to 3% in the Russian Federation, 2% in Ireland and above 1.5% in Korea, Turkey, Italy and Greece, for instance) (fig 3). Perhaps here the digital transformation will help us get real traction towards achieving gender equality. To this end, ensuring that women are well equipped to undertake more technical tasks may help put them on the path to higher salaries. Fig 3.



In Math and Science, a Growth Mindset Benefits Girls

Individuals with a “fixed mindset” believe that intelligence is static. In contrast, individuals with a “growth mindset” believe that intelligence can be developed. Because of this they want to learn more and, therefore, tend to embrace challenges, persist when they encounter obstacles, see effort as a path to mastery, learn from criticism, and be inspired by the success of others.

Individuals with a fixed mindset are susceptible to a loss of confidence when they encounter challenges, because they believe that if they are truly “smart,” things will come easily to them. Individuals with a growth mindset, on the other hand, show a far greater belief in the power of effort, and in the face of difficulty, their confidence actually grows because they believe they are learning and getting smarter as a result of challenging themselves.

These research findings are important for women in STEM because encountering obstacles and challenging problems is in the nature of scientific work. When girls and women believe they have a fixed amount of intelligence, they are more likely to lose confidence and disengage from science and engineering when they inevitably encounter difficulties in their course work.

This is true for all students, but it is particularly relevant for girls in math and science, where negative stereotypes persist about their abilities. Therefore, in math and science, a growth mindset benefits girls.

Recruitment and Retention of Women in STEM Majors

Researchers Jane Margolis and Allan Fisher suggest that many factors can combine to increase women's recruitment and retention in STEM. They stress that departments should pay attention to the student experience as well as faculty diversity to improve recruitment and retention of women.

Recommendations

Get Girls Interested in Science and Engineering

- Spread the word about girls' and women's achievements in math and science.
- Teach girls that intellectual skills, including spatial skills, are acquired.
- Teach students about stereotype threat and promote a growth-mindset environment.
- Talented and gifted programs should send the message that they value growth and learning.
- Encourage children to develop their spatial skills.
- Help girls recognize their career-relevant skills.
- Encourage high school girls to take calculus, physics, chemistry, computer science, and engineering classes when available.
- Make performance standards and expectations clear.

For Students

- Actively recruit women into STEM majors.
- Send an inclusive message about who makes a good science or engineering student.
- Emphasize real-life applications in early STEM courses.
- Teach professors about stereotype threat and the benefits of a growth mindset.
- Make performance standards and expectations clear in STEM courses.
- Take proactive steps to support women STEM majors.
For example, sponsor social events to help integrate women into the department, provide a student lounge open to all students to encourage interaction outside of class, or sponsor a "Women in (STEM major)" group.

For Faculty

- Conduct departmental reviews to assess the climate for female faculty.
- Ensure mentoring for all faculty.
- Support faculty work-life balance with stop-tenure-clock policies and on-site child care.

Conclusion:

Women play an important role in a lot of spheres in the contemporary society. They make great contribution to the development and improvement of life in a lot of spheres. Unfortunately, science and technology are the spheres where women do not have equal possibilities with men. There are a lot of possible explanations of this inequality, but gender bias, prejudices and unequal distribution of resources are among the main ones. Gender inequality in STI is more common in the developing countries. There are different ways to deal with the problem. Proper monitoring, proper informing and creating necessary work conditions should improve the situation in this field. Gender equality and normal work conditions for both, men and women are the characteristics of any normal society and it is necessary to pay attention to the problem of gender inequality in science and technology because this can be beneficial for the development of these spheres.

Women should be encouraged to bring their vision and leadership, knowledge and skills, views and aspirations into the development agenda from the grassroots to international levels. Science and technology brings economic growth and well-being to people and it is not only the empowerment of women through science and technology, but also the enrichment of science and technology through women's participation.

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