Journal of East-West Thought
ISSN: *2168-2259 (online)*
(https://jetjournal.us/)
Volume 15, Issue 1, Jan-March – 2025 Special Issue 1
Impact Factor: 7.665, Peer Reviewed and UGC CARE I

WOMEN IN SCIENCE AND TECHNOLOGY: PIONEERING INNOVATIONS

Asst. Prof. Prachi Chavan, Ashoka College of Education, Nashik

Abstract

Women have pioneered inventions that have changed society and made major contributions to science and technology throughout the past century. Women have historically encountered several obstacles while trying to obtain professional and educational opportunities in these traditionally male-dominated professions. However, new viewpoints, ground-breaking discoveries, and technical improvements have been made possible by the tenacity and tenacity of female scientists, engineers, and technicians. The difficulties, successes, and ground-breaking inventions of women in science and technology are examined in the following paper, along with the significance of their achievements and current initiatives to advance gender equality in these domains.

Introduction

Around the world, women's absence in science and technology has been an enduring issue. Nonetheless, women have made significant contributions to the development of science and technology. Women have shown outstanding potential and resourcefulness in spite of a structural barriers, frequently making discoveries that have been fundamental to the advancement of science and technology. Analyzing the past contributions of women to science and technology, outlining their major accomplishments, and discussing current initiatives to promote greater encouragement and engagement for the next wave of women in these fields are the objectives of this study.

Historical Background: Breaking Down Barriers to Gender

In many societies, women weren't permitted to pursue formal education for generations, especially in the scientific and technical domains. Women just started to notably enter these fields in the late 19th and early 20th century. Marie Curie, who won two Nobel Prizes in multiple fields of science for her revolutionary research on radioactivity, was one of the first pioneers. Against prejudice and social norms that restricted women to household duties, Curie's contributions established the groundwork for the advancement of radiation and nuclear physics.

In the early days of computers, women like Ada Lovelace and Grace Hopper also forged new paths. Because of her collaboration with Charles Babbage on the Analytical Engine, Lovelace is often credited with being the first person to program a computer. The first compiler for a computer programming language was designed by Hopper, a computer scientist and rear admiral in the US Navy, and it assisted in developing modern computer programs.

Women in Modern Science and Technology

Women continue to break away hurdles in science and technology presently. Despite persisting obstacles, women scientists and engineers are becoming more widely recognized. Women who have achieved worldwide notoriety include Sheryl Sandberg in technology leadership, Jennifer Doudna in biotechnology, and Jane Goodall in primatology. The

Journal of East-West Thought
ISSN: *2168-2259 (online)*
(https://jetjournal.us/)
Volume 15, Issue 1, Jan-March – 2025 Special Issue 1
Impact Factor: 7.665, Peer Reviewed and UGC CARE I

CRISPR-Cas9 gene-editing system, which Jennifer Doudna and Emmanuelle Charpentier co-developed, has enormous prospects to treat inheritable diseases and transform medication.

An analog predecessor to contemporary monitoring systems, the home security system was created in the 1960s by Marie Van Brittan Brown Known as the "mother of the Internet," Radia Perlman made significant advances to network protocols and has been linked with pioneering the Spanning Tree Protocol, a key piece of technology that made Ethernet networks possible.

Major Obstacles Women Face in STEM Fields

In spite of these outstanding accomplishments, women still encounter many obstacles in the scientific and technological domains. Gender disparity in STEM education and employment is one of the main problems. Research indicates that women are frequently overlooked in STEM degrees and professions, especially in computer science, physics, and engineering. One of the main factors preventing women from advancing in their careers is bias, both explicitly and implicitly. The phrase "leaky pipeline" is commonly used to explain how these obstacles cause women to leave STEM disciplines at different points in their education and careers.

Prejudice and workplace customs also pose serious challenges. Women in STEM fields frequently face inadequate recognition for their contributions, unequal payouts, and a lack of mentorship. Moreover, many women are traditionally discouraged from pursuing steady employment in STEM disciplines due to the difficulties of juggling hard STEM careers with family obligations.

Current Gender Equality Initiatives and Strategies

To advance racial equality and urge more women to seek jobs in science and technology, an array of schemes and initiatives have been implemented . The primary objective of groups like Girls Who Code, Women Who Code, and the National Girls Collaborative Project is to encourage young girls and women to explore technology to master data science, engineering, and coding.

Through mentorship programs, grants, and policies aimed at reducing prejudice based on gender, educational institutions and research centers are placing a greater emphasis on diversity and inclusion. One systemic strategy to overcome the disparity in gender in academia is the Athena Swan Charter, a program aimed at promoting gender equality in UK universities.

Additionally, through initiatives aimed at diversity, equity, and inclusion, large tech firms like Google, Apple, and Microsoft have pledged to rise the number of women in their workforce. For the next wave of women in technology, women in senior roles at big companies—like Mary Barra, CEO of General Motors, and Ginni Rometty, former CEO of IBM—are assisting in breaking down the glass ceiling.

The Future: Creating an Inclusive STEM Culture

Society must make expenditures in mentorship, education, and gender-disparity-addressing policies if it hopes to guarantee that women will keep adding significantly to science and technology. In order to shape the next wave of creativity, it is crucial that girls

Journal of East-West Thought
ISSN: *2168-2259 (online)*
(https://jetjournal.us/)
Volume 15, Issue 1, Jan-March – 2025 Special Issue 1
Impact Factor: 7.665, Peer Reviewed and UGC CARE I

have access to the resources and tools they need to explore STEM professions. Women's contribution to science and technology will be raised through fostering situations where they feel appreciated, supported, and free to flourish.

Women will also have an active role in determining research priorities and technical developments if there is a higher proportion of women in top positions within scientific and technological institutions. The world will gain from the wider range of thoughts and innovation that women contribute to invention as we continue to remove obstacles and promote inclusion.

Conclusion

From Marie Curie's groundbreaking research to Jennifer Doudna's more recent innovations, women have made revolutionary advances to science and technology. Women continue to pioneer ideas that influence our world in spite of the obstacles they encounter. The numerous views and thoughts of women who continue to question the existing quo and define the benchmark for innovation will surely benefit science and technology in the future as society drives for equality as well as diversity in these domains.

References

1. Curie, M. (1903). Recherches sur les Substances Radioactives.
2. Lovelace, A. (1843). Notes on Babbage’s Analytical Engine.
3. Doudna, J. (2012). The Discovery of CRISPR-Cas9: Gene Editing Revolution.
4. Hopper, G. (1980). Programming Language Development in Computing.
5. Sandberg, S. (2013). Lean In: Women, Work, and the Will to Lead.