

# Role of Women in Science and Technology towards Nation Building

*Prof. K Raja Rajeswari, Ms. Ch. Sirisha, Ms. N. Roopa Vathi*

*Department of Electronics and Communication Engineering*

*Gayatri Vidya Parishad College of Engineering for Women, Visakhapatnam- 5300048, Andhra Pradesh, India*

**Abstract:** A significant improvement in Science & Technology can be seen over a decade. However, women are still under represented both in academics and in private sector. Sensitizing and encouraging women towards science education accomplishes in the progression of scientific and technological issues in the society to build a strong nation.

This paper enlightens research developments and various schemes for women empowerment in their career. The role of women in various technological fields are elaborated. Women's inclusion and empowerment in science means bringing in a different and complementary point of view that has the potential to produce a high positive impact on the final output for human progress.

**Keywords:** Science, Technology, Women Empowerment, Education, Research

## I INTRODUCTION

To build a strong nation, Women along with men play a crucial role. So far Women have been treated as minor section in playing their role for the development of Science & Technology (S&T) and related techniques. The main problem behind this is lack of collaboration between Men and Women in their working organization in discussing their problems in the subject area concerned mostly to the research. No country grows without progress in the field of Science & Technology. Over the years, Indian Women got more freedom to express themselves and have overcome a traditional mindset. They are taking active part in the development of technologies and have excelled in all the professions like Teaching, Medicine, Engineering, Information

Technology, Biotech, Nuclear Science, Space Science, Bio medical and many such specialized domains in the Science & Technology area.

## II SCIENCE & TECHNOLOGY AND IT'S DEVELOPMENT

Science and Technology go hand in hand as both are interrelated with each other. Science gives the knowledge or facts and Technology performs the real time operations or practical realizations of the facts. Technology plays a fundamental role in the improvement of the quality of life and leads to the economic growth which in turn helps in the development of the country. Any countries strength mainly depends on its Military & armed force and the advanced type of weapons they use. The S&T plays a crucial role in manufacturing of these weapons especially from dedicated organizations like "BrahMos" and various defence research labs.

Science, Technology and the development of nations & society are all proportional to each other. Nehru, the first prime minister of India in his address to the Indian Science Congress said, "New-Born India needs inputs of Science not through hollow words, but through concrete efforts directed at building necessary infrastructure from scratch." Since Independence, India has given a great importance to Science and Technology in Nation building. To promote and undergo these activities, many institutes were established like DRDO, IITs, CSIR labs and DST.

In recent years, Women too are choosing S&T fields as their career prospects. The Government and other sectors should give priority to Women to work in

S&T wings. Even after entering into this profession, they cannot work till late hours as men due to the domestic responsibilities. In this, they need support from their parents, in-laws and husband side to overcome from this problem and also the working organizations should extend their cooperation for women in this regard.

### III VARIOUS SCHEMES FOR WOMEN EMPOWERMENT

In this respect Department of Science and Technology (DST) has introduced various developmental schemes to Women to encourage them and to bring back them to main stream that is what they missed after their marriage due to domestic responsibilities. Various schemes and programmes are working towards the cause of promoting women in Science and Technology by DST, Govt. of India.

The DST is committed empowering women scientists and already implementing schemes like (WOS-A, WOS-B, WOS-C). Under this they are being given various research funding projects in their respective specializations.

More than 2200 women scientists & Technologists have benefitted from the women scientists' schemes, including WOS-A, WOS-B, WOS-C in the last ten years including the current year. Women ranging in the age group 27 to 57 years receive fellowship support ranging from Rs 25000/- to Rs 55000/- for different categories, under Knowledge involvement in Research Advancement through Nurturing (KIRAN) scheme for contributing higher education in S&T after a break in career.

The WOS-A scheme provides a platform to Women scientists and technologists for pursuing research in basic or applied sciences and offers the opportunity to work as bench level scientists. The scheme plays a pivotal role in gender mainstreaming. The support

available in five disciplines under WOS-A are namely Physical and Mathematical Sciences, Chemical Sciences, Life Sciences, Earth and Atmospheric sciences and Engineering technology.

The Ministry of Science and Technology has launched the SERB-POWER (Promoting Opportunities for Women in Exploratory Research) Scheme in India. The main objective of this scheme is to provide opportunity to the Women by funding them in science and engineering research activities in academic institutions and Laboratories.

Women Technology parks is a centre established to train the rural women with the recently developed methods such that they can implement them at their work place to establish their own small-scale enterprises or to become self-reliant which upgrade their livelihood status.

### IV ROLE OF WOMEN IN VARIOUS S&T FIELD

Women play a vital role in each and every sector. There is a huge difference in the way a men or women think. Men generally work more on the control part and how to make something more powerful. Whereas Women work with the intension to make their life easier and comfortable. Its like men works on inventing new things and women tries to improve the things which are already in existence.

Men and Women possesses different set of skills and knowledge and combinedly better results can be obtained if both work in collaboration. Some of the technologies wherein women are also now actively taking part and which in turn develops the growth of the nation are as follows:

#### *Space Technology*

Space Technology is useful in communication and remote sensing. It can be used to monitor and provide timely data to community. It enables e-

education which leads to higher literacy. During the early days of space technology, women served as human computers. They were mostly used to process data in experiments. Though overall women are still less often chosen to go to the space than men but women plays a major role and serve as integrated members behind the scenes.

### ***Health Sector***

With the advancements in scientific knowledge over the past century, It has seen that there is huge improvement in the human health. India has succeeded in controlling of the death rate from the diseases. The Technology has so transformed that the paper system which was used earlier now is changed in terms of records with a unique ID. This unique ID stores the complete information of a person which has a benefit of tracking the patient case history, diagnostic tests taken and their reports. Women if educated, can improve the health of their children's by taking simple measures like good hygiene, exercise a dietary food habit. Female health sector providers play an important role in educating society to recognise their health and nutrition needs.

### ***Agricultural Production***

Advances in S&T has marked a significant growth in agricultural production. Various applications of technology in agriculture like India's Rainbow Revolution, Soil health card, APMC farmers go cashless, Pradhan Mantri Kisan Urja Suraksha evam

Utthan Mahabhiyan (PM KUSUM) and also digital initiatives like e-sagu, community radio, digital green, e- National Agriculture Market (e-NAM), has played an important role to fulfil the needs of the farmers. The new age Agri revolution in India helps to improve the overall quality and accuracy in harvesting. Artificial Intelligence (AI) technologies helps the farmers in predicting the farms and helps farmers better plan.

The women admission in graduation and post-graduation of agricultural sciences is given more priority as they can develop AI methods to get more yield and new automation techniques can be introduced to make farming ease. They can work from home also to develop their techniques and can patent their work also. Later it reaches to the village leads to implementation. This boosts the productivity. Role of modern agricultural farming in Nation building is in the forefront if women are involved in this area definitely their work will be recognized.

### ***Power sector***

Power sector plays a vital role in the economic growth and also in the development of any country with the technological intervention. This sector like National smart grid mission, smart metering, Energy storage and renewable energy helps to increase in the efficiency and sustainability of energy. Though this is one of the major sectors, still women participation in the energy sector is a major challenge. They generally go for the administrative roles rather than science, technology, engineering and mathematics (STEM) jobs. In the recent days many women are working in technical and administrative wings in the low power electric sectors

### ***Education System***

To make India economically good and to improve the standards in the international market, education plays an important role. To improve education system, extensive use of technology in teaching and learning is needed. Education planning and management is one key important criterion especially in the higher education.

To promote online education for all the students irrespective of their location, background and internet connectivity, Govt. has initiated several

programs like PM e-vidya, Digital Infrastructure for Knowledge Sharing (DIKSHA), Study Webs of Active Learning for Young Aspiring Minds (SWAYAM), e-pathshala, National Initiative for School Heads and Teachers' Holistic Advancement (NISHTHA) and Virtual labs.

Education of a Women in India plays a significant role in improving living standards in the country. An educated women not only promotes education to their successors but also provide guidance to their children. A well-educated woman provides skills, knowledge and self-assurance necessary to be a better mom, worker and citizen. Education increases the literacy rate of women, eliminates human trafficking, they can be political representors and they get equality in society. When women are educated and they go or work, there is an increased earning power and thus eliminating the poverty level.

### **Market and trading sector**

The impact of technology in the market operations is also increasing. ML&AI concepts are used in the new trading strategies to resolve investment challenges.

Computerized banks in India with advanced self-service capabilities, application programming interfaces, low value digital transactions have made convenient banking to the customers and also banking systems. Even average women should be trained to operate the online- banking transactions and to be educated to protect from various security aspects to safeguard themselves from various hackers. And also, women employment in banking system should be promoted as this type of working is more suitable for women. Govt. has to take proper initiatives to increase the job opportunities by enhancing reservation for women in banking sector and they should be properly trained in all on-line

mode of transactions and they can be deputed for short time to villages to train women in rural areas especially tribal women.

### **V CONCLUSION**

India should be in a position to lead the world in the future especially in S&T growth. They have to focus more on new technologies like renewable energy, mobile technologies, biomedical engineering, green technologies, bio-sciences which helps to change human life style for better future. Respective Government should see that these technologies to be penetrated into rural areas also so that the people mostly from tribal section will get benefitted. This is a bit tough job. The Govts at central as well as at state level should have to take it as a challenge.

University's role is also crucial in this regard. They have to develop innovative ideas that will lead to a better India through scientific excellence in research. The Women also should be provided with equal opportunities on par with men. Already many women candidates are their working in research and for their PhD degree in the state universities like NITs and IITs in various disciplines of S&T but this women participation is to be increased to make their role more significant. They have to take active part in the developing and leading role and their hidden talent should be recognised and should be utilised for better "New Nation Building".

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**AUTHORS**

**K. Raja Rajeswari** obtained her B.E., M.E. and Ph.D. degrees from Andhra University, Visakhapatnam, India in 1976, 1978 and 1992 respectively. Presently she is professor in the Department of Electronics and Communication Engineering, Director (R & D) Gayatri Vidya Parishad College of Engineering for Women, Visakhapatnam and formerly professor from Andhra University. She has published over 200 papers in various National, International Journals and conferences. She is author of the textbook *Signals and Systems* published by PHI. She is co-author of the textbook *Electronics Devices and Circuits* published by Pearson Education. Her research interests include Radar and Sonar Signal Processing, Wireless Communication Technologies. She has guided fifteen Ph.D.s and presently she is guiding twenty

students for Doctoral degree. She served as Chairperson IETE Visakhapatnam Centre for two consecutive terms (2006 to 2010). Presently she is Governing Council Member of IETE, New Delhi. She is zonal coordinate (for south) and Technical Program Committee Chairperson. She is recipient of prestigious IETE Prof SVC Aiyar Memorial National Award for the year 2009, Best Researcher Awardee by Andhra University for the year 2004 and recipient Dr. Sarvepalli Radhakrishnan Best Academician Award of the year 2009 by Andhra University. She is Senior Member in IEEE. She is expert member for various national level academic and research committees and reviewer for various national/international journals. She has two published patents.



**Ms. Ch. Sirisha** currently an Assistant Professor of Electronics and Communication Engineering at Gayatri Vidya Parishad College of Engineering for Women, Visakhapatnam, Andhra Pradesh and pursuing Ph.D (Part-time) in Andhra University. Her teaching experience is around 12+ years. She has

published around Six papers in the field of VLSI & Embedded Systems. Her research interests are in the area of VLSI Design & Embedded Systems, Wireless Communications and Cognitive radio.



**Mrs. N. Roopa Vathi** received B.Tech degree in Electronics and Communications Engineering from J.N.T. University Kakinada, M. Tech degree in Radar and Microwave from Andhra University. Presently she is working as an Assistant Professor in the department of Electronics and Communication Engineering, G.V.P. College of Engineering for Women, Visakhapatnam. Her research interests include Communications and Radar Signal processing.