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ATTITUDE OF SCHOOL TEACHERS TOWARDS POPULARIZATION OF SCIENCE

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Abstract

Knowledge about science and technology is inevitable in this modern world. There is a great demand for communicating and/or popularizing science among the teachers/masses. There are three aims of popularizing science: one, to reduce science-phobia in general population; two, to help the youth in their choice of career; and three, to prepare the ground for good public reception of scientific endeavors, which in turn will favour research funding through democratic institutions. In this study, an attempt has been made to study the attitude of school teachers towards popularization of science. For this purpose 248 school teachers were randomly selected and Attitude Scale towards Science Popularization developed by Saini was administered on them. t-test was employed to find out the significance of difference between the various groups. The results indicated that school gender-wise, locality-wise and type of management of school-wise, all the teachers do not differ significantly in their attitude towards popularization of science.

Keywords: *Popularization, Attitude, Technology and scientific instructors.*

INTRODUCTION

Today, science communication is a fast-emerging field of scientific enterprise both in the developed and developing countries. Therefore, trained science journalists, script writers, reporters and communicators are in great demand in different media outlets and related institutions or laboratories. Recognizing this scenario, Vigyan Prasar, NOIDA was set-up as an autonomous organisation in 1989 under Department of Science and Technology, with the objectives to take up large-scale science popularization tasks/activities, to promote and propagate scientific and rational outlook, to act as a resource-cum-facility centre for S&T communication. In this pursuit, Vigyan Prasar has felt the need to develop a Database of Science Communicators in India in collaboration with the Manpower Management Centre, New Delhi which has the expertise of developing such databases. Scientific literacy means a firm understanding of the nature of science and the interrelationship between science, technology and society. Thus scientific literacy implies: good science background – knowledge of facts, concepts and theories with the ability to apply them. Clear understanding of the nature of science. A positive attitude towards science and technology. The ability to make value judgment and decisions in science-based societal issues. The ability to use scientific method to solve problems and to make decisions in our day-to-day life. A better understanding of the world around him as a result of science instructor. A person possessing the above traits could be considered to be scientifically literate. Unfortunately, in our schools, science teachers themselves lack several of the above attributes. They may possess the basic science background with knowledge of facts, concepts but they fail to impart the other aspects of scientific literacy to their pupils. Hunt and Andrews summarized that if you have a scientific attitude you are curious, full of a spirit of inquiry. You base your thinking and your decisions on facts. You are open-minded. You understand the natural laws and you find the explanation of occurrences by applying them. Thruston (1948) has defined attitude as the degree of positive or negative effect associated with some psychological object. The Kothari Commission (1964-66) has rightly said, "Destiny of India is being shaped in her classrooms". It is the teacher who will influence their attitudes, values, interests, morals, ideals, conduct and behavior. For the proper development of attitudes, interests, morals, ideals, conduct and behavior of the future generation, it is essential to first inculcate these qualities in the teachers.

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Popularization of Science: Webster's Dictionary (1966) defines the term popularization as an act of popularizing or the state of being popularized; some things that is popularized especially, a publication in terms comprehensible to the average man. Report of the Committee for Review of NPE (1986) says that attitude can be developed through exposure to role models, imitations of role models, peer attitudes and other socialization models. So, attitude towards science popularization is the affective orientation towards popular science communication. Popularization of science is nothing else than an endeavour to image scientific ideas in such a way that everyone (especially non-scientists) can grasp the fundamental concepts and have an idea of what science in essence is. Of course, no one really knows what 'science' is, not even the scientists themselves. Philosophers trying to describe what the scientific method could be and others trying to put down what the scientific method should be, found out (it took them a lot of time) that there is nothing like the 'one and only' scientific approach. The impossibility to give a distinct and unique definition follows. Nevertheless, the phenomenon 'science' and its results do exist. Although nobody can tell exactly what 'science' is all about, everyone should have an idea anyway. The question at stake here is whether this is possible and, if so, to what extent. The science plays a crucial role in the modern society, and the popularization of science in its electronic form is closely related to the rise and development of the World Wide Web. Science popularization has now made an important step forward, because the Web contributes today as an effective means of improving the public understanding of science. The Web has made it possible to popularize the science via popular search engines. The Web creates a link between specialists and the public; in short, between science and common sense, just by a hyperlink. The science popularization is an attempt to reduce the distance standing between science specialists and the public. Science popularization is interpretation of scientific information (science) intended for a general audience, rather than for other experts or students. Science popularization via the Web is a programme that takes science to web users with an objective of making them aware of the efforts, achievements and advances of science. Such programmes could include e-books, e-conferences, e-newspapers, online journalism, online workshops, seminars, and meetings, electronic forums, open-access journals, audio-visual material, etc. "Popularization of science is nothing else than an endeavour to image scientific ideas in such a way that everyone (especially non-scientists) can grasp the fundamental concepts and have an idea of what science in essence is" (Cornelis, 1998). The primary objective of the popularization of science is to increase public understanding of science. In the popularization of science the capabilities of the possible reader (web searcher) has to take into consideration. Since the reader is not a scientist, a 'translation' has to be made, making science more accessible (Cornelis, 1998). There is no doubt that the science popularization relies on simplification. Popularisers simplify science because they think it is the only way to make it affordable to lay audiences (Leon, 1998). The main goals of science popularization are:

- to provide generalized, simplified science concepts,
- to increase the interest and awareness of the public about the science and scientific research and realization of their results in practice,
- to support collaboration and participation of the public on developments in science,
- to improve the scholarly-communication skills of scientific institutions and scientists, to integrate the public into the popularization of solutions of research and development tasks.

REVIEW OF RELATED LITERATURE

Science due to its utilitarian, intellectual, vocational, cultural, moral and aesthetic values has been placed in the curriculum with due prestige. Besides these values, science education imparts training in the

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scientific methods and develops scientific attitude, which are very valuable and at the same time are transferable to other situations in life (Kumar, 1997). Scientific attitude is just a setting of mind and way of life according to certain principles. The scientific attitude includes curiosity towards the surrounding environment, belief in cause effect relationship, patience, truthfulness, impartiality and open-mindedness etc. National Society of the Study of Education (NSSE) defines scientific attitude as open-mindedness, a desire for accurate knowledge, confidence in procedures for seeking knowledge and the expectations that the solution of the problem will come through the use of verified knowledge. Singh (1993) concluded that scientific attitude refers to critical observation inquisitiveness, broad mindedness and open mindedness, objectivity in approach, non-belief in superstition and hearsay, belief in proof, trust in correct evidence, respect for other opinion, faith in scientific method and unprejudiced judgment, belief in cause and effect relationship.

RATIONALE OF THE STUDY

Science education not only enhances knowledge and empowers students through learning but also, crosses cultural and geographical barriers, bringing students to the forefront of development. It provides a scientific approach to thinking and helps students in understanding the foundation and building blocks behind the phenomena they can see. It enables the students, particularly of rural background to think critically and analyze their surrounding related to their socio-economic and health status. It is also important to support and stimulate students to involve in the professional and scientific activities. They should be made aware of the developments in science; and opportunities for their respectful living. The aptitude for scientific research and the spirit of enquiry are developed in a child at a young age. A majority of school teachers in our country are young and they play a dominant role in shaping the child's character and aptitudes. At the M.S. Swaminathan Research Foundation in Chennai, we have a programme titled "Every Child a Scientist". The young age is the age of innovation. Therefore, we owe a deep sense of gratitude to the millions of school teachers who, in spite of many constraints arising from the multiple burdens on their time, help young students to become scientists in their later life.

OBJECTIVES OF THE STUDY

1. To study the attitude of male and female school teachers towards popularization of science.
2. To study the attitude of rural and urban school teachers towards popularization of science.
3. To study the attitude of government and private school teachers towards popularization of science.

HYPOTHESES OF THE STUDY

1. There will be no significant different difference in the attitude of male and female school teachers towards popularization of science.
2. There will be no significant different difference in the attitude of rural and urban school teachers towards popularization of science.
3. There will be no significant different difference in the attitude of government and private school teachers towards popularization of science.

METHODOLOGY

The survey method under descriptive method of research was used in this paper. In the view of the above, school teachers of district Solan of Himachal Pradesh constituted the population of the study. It included the teachers teaching in government as well as privately managed schools in the said district. For the present study, the sampling was done at two stages. At the first stage twelve government schools and

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twelve private schools were taken randomly. And at the second stage, two hundred and forty eight school teachers were selected randomly from the sampled twenty four schools. To collect the data, investigator used the attitude scale developed and standardized by Saini. A rapport was established with the teachers to get their frank views/opinions on various items pertaining to science popularization. Since the data from the attitude scale was available in the form of scores, so 't'-test was applied to find out the significance of difference between the various groups.

ANALYSIS AND INTERPRETATION OF DATA

Table 1. Comparison on Attitude of Male & Female School Teachers towards Popularization of Science

Sl. No.	Group	N	Mean	S.D.	df	't' Value
1.	Male	112	96.20	12.12	246	1.793 NS
2.	Female	136	93.40	12.52		

NS = Not Significant

It is evident from table 1 that't' value (1.793) is not significant even at 0.05 level of significance. Thus both of the groups do not differ in terms of their attitude towards popularization of science. Hence null hypotheses stated that there will be no significant difference in the attitude of male and female teachers towards popularization of science is accepted. Therefore in the present case it may be concluded that male and female teachers do not differ significantly with regard to their attitude towards popularization of science. This may be due to the fact that, there is not much of difference in the opportunities and exposure, which are available to male and female teachers. Obviously we cannot accept any significant difference in their attitude towards popularization of science.

Table 2. Comparison on Attitude of Rural and Urban School Teachers towards Popularization of Science

Sl. No.	Group	N	Mean	S.D.	df	't' Value
1.	Rural Teachers	102	96.22	12.20	246	1.790 NS
2.	Urban Teachers	146	93.36	12.62		

NS = Not Significant

Table 2 shows that the 't' value (1.790) is not significant event at 0.05 level of significance. Thus there is no significant difference in the attitude of the two groups towards popularization of science. Thus the null hypothesis is accepted. This means that locality of teachers do not play significant role in their attitude towards popularization of science.

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Table 3. Comparison on Attitude of Government & Private School Teachers towards Popularization of Science

Sl. No.	Group	N	Mean	S.D.	df	't' Value
1.	Government School Teachers	124	96.24	12.62	246	1.751 NS
2.	Private School Teachers	124	93.39	13.01		

NS = Not Significant

Table 3 shows that 't' value 1.751 is not significant even at 0.05 level of significance. Thus it is concluded that the two groups under consideration do not differ significantly in terms of their attitude towards popularization of science. Thus the null hypothesis is accepted.

FINDINGS

- Male and female school teachers do not differ significantly on their attitude towards popularization of science.
- Rural and urban school teachers do not differ significantly on their attitude towards popularization of science.
- Government and private school teachers do not differ significantly on their attitude towards popularization of science.

EDUCATIONAL IMPLICATIONS

Findings of this study revealed that gender-wise, locality-wise and type of school wise (government or private) teachers do not differ significantly in their attitude towards popularization of science. It may be due to this reason that science is a compulsory subject during the first 10 years of schooling, irrespective of gender and locality wise, all the teachers are getting equal opportunity to learn, experience and practice science. Further due to the advancement in the field of science, all the teachers realized the importance of technology and knowledge of science its inventions and their uses. Nowadays, educational facilities and atmosphere in government and private school may be almost same. Although all the teachers have almost equal attitudes towards popularization of science but still, there is need to increase their attitudes towards popularization of science by organizing more and more science fair, science quiz, science clubs, science museum and field trips to various science cities. To develop and promote positive attitude different agencies like NCERT, SCERT and DIET should organize the different activities and programmes to sensitize the teachers towards science, its uses and application in daily life.

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