

SCIENCE CLUB: AN EFFECTIVE TOOL FOR PROMOTING AWARENESS AND TEMPER FOR SCIENCE AND TECHNOLOGY AMONG SCHOOL GOING STUDENTS

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ABSTRACT

A science club offers children the chance to do science-related activities that extend and enhance the science they experience in the classroom. Most clubs use the opportunity to explore areas of science not covered by the curriculum and to give the club members plenty of opportunities to do practical science. Vigyan Prasar has established itself as a nodal resource centre in the field of science and technology communication in the country. Strengthening science and technical education programme in schools is one of the most important initiatives of Vigyan Prasar. The programme is carried out by creating Science Clubs (VIPNET Clubs) in schools. The present study particularly interested in learning about working of science clubs, and its outcomes in terms of creation of awareness and temper for science and technology among school going students in Madhya Pradesh, India.

KEYWORDS: Science communication, VIPNET science club, Vigyan Prasar.

Introduction

At the turn of 20th century, India boasts of having largest pool of scientific and technical manpower in the world. This human resource is also hailed as the (demographic) window of opportunity to pull the country out of poverty web, if used judiciously. To a large extent, these achievements could be credited to the planned development efforts (over successive five year plans) to promote schooling of all children. It is also attributed to greater attention paid to science and technical education and creating an enabling environment for it in all schools. Vigyan Prasar (VP), an autonomous body established by the Department of Science and Technology (DST), Government of India, is one of the key agencies engaged in creating an enabling environment for popularizing science among school age children and wider society. Its primary objective is to promote and propagate—as widely as possible—a scientific, rational outlook and develop scientific temperament in the society. Among Indian leaders, the one who

understood most clearly the relationship between science and society was Jawaharlal Nehru who has remarked, "Science is not a matter of merely looking at test tubes and mixing this and that and producing things big or small. Science, ultimately, is a way of training the mind and the whole life functioning according to the way and methods of science." Those demands a continuing long range program of developing, in all sections of society, what Jawaharlal Nehru referred to as the 'scientific temper' and it is essential to ensure application of science and technology exclusively for the benefit of mankind at large (Menon, 2012). Inculcating the method and spirit of science in society as a whole the most important single element is education (Bhargava and Chakrabarty 2007). The teaching of science should be recast so that enables children to examine and analyze everyday experience. Concerns and issues pertaining to the environment should be emphasized in every subject and through a wide range of activities involving outdoor project work (www.ncert.nic.in).

Over the years, the Vigyan Prasar has established itself as a nodal resource centre in the field of science and technology (S&T) communication in the country. Vigyan Prasar also undertake development of new training modules/methodologies/ equipment/ devices for S&T communication. Strengthening science and technical education programme in schools is one of the most important initiatives of Vigyan Prasar. The programme is carried out by creating Science Clubs (VIPNET Clubs) in schools (Mazzonetto, 2005). Approximately 11,823 science clubs (VIPNET Clubs) have been established in schools (62%), college (1%) and outside of the school or civic society (37%) across the country by Vigyan Prasar. The name of the science club is given on the named after scientist (48%), school (20%), society (12%), local prominent personality (5%) and others (15%). The state with maximum number of clubs is Bihar followed by Madhya Pradesh with 2320 and 2241 clubs respectively. The district with largest number of science clubs is Ratlam (Madhya Pradesh) followed by East Champaran (Bihar) with 561 and 350 respectively (Annual report, Vigyan Prasar, 2011-12). The broad objectives of these clubs are as follows.

- Dissemination of information on science and technology (S&T). The VIPNET clubs are planned to be Vigyan Prasar's agent of change among school age children in all parts of India. Various short and long-term activities and programmes are envisaged to be carried out by the science clubs.
- Evolution of a holistic approach (among students) towards problem solving through creating awareness, concern, involvement, and application of the scientific methodology for their resolution.
- Stimulation of the spirit of curiosity, enquiry, innovation and creativity (among students) through activities which would supplement conventional education and make science a very enjoyable and interesting pursuit.

Science clubs carry out regular programmes to orient and educate students on concepts and newer developments in the field of science and technology. These clubs also organizes demonstration projects, host annual competitions and on special occasions such as solar eclipse etc., plan exposure visits and group activities. VIPNET clubs also function as knowledge bank by making available books and latest journals on science and technology through schools' libraries.

Materials and Methods

VIPNET clubs of Madhya Pradesh were selected for study with the following objectives:

1. To learn about the working of Science Clubs in schools including membership, activities undertaken, usage of literature provided.
2. To assess the outcomes of Science Club's programme in terms of creation of awareness and temper for Science and technology among school going students.
3. To provide inputs to consolidate the gains made by the programme so far, and to identify gaps and prioritize areas in need of improvement to achieve the objectives of Science Club programme.

A systematic random sampling procedure was adopted to select the districts and schools from the state. At the time of study there were 1467 science clubs in 56 districts of Madhya Pradesh. Looking at distribution of clubs across the districts, only those districts were considered where at least 10 or more science clubs are established. There were 33 districts such districts to draw the sample. These districts were divided in to 4 strata and from every strata, one district was randomly selected for the study. The selected districts were; Ujjain, Chattarpur, Mandla and Gwalior. Both quantitative and qualitative data were collected by a self-administered questionnaire for the study. The data were collected and statistically analyzed by SPSS.

Results and Discussions

The Science Clubs have basically been created to inculcate a temper and understanding for science and technology among school age children. The background characteristics of students under study, their participation in the Science Clubs' activities and perception on advantages of science clubs were analyzed. The sample of students under study showed that majority of students were in 15-19 years age group (81.6 % boys and 86.4 % girls) and majority of boy students (50.9 % boys and 59 % girls) were in 11th&12th classes. Study was done to get information about favorite subject of Students under study. Almost 100 % student noted that Science as the most favorite subject of the students. It was followed by languages (43.9 % boys & 51 % girls). In both the states, boys and girls in all the classes had same preferences. Further the preferences of students have opted for science at high school level or would do so for their higher studies was 92.4 % for boys and 91.6 % for girls.

It was then studied about the awareness about science clubs and study revealed that about 90 % students (95 % boys and 91 % girls) were aware of the existence of Science Club in their schools in their locality. The data further shows that though the awareness for the Science Club was higher among the students in 10-12 class and in junior classes also it was quite significant. The monitors seem to be little less informed about the existence of Science Club in their school than the other students.

The science clubs organizes a range of activities to achieve these objectives and to develop understanding of the concepts of science and, interest in learning the discipline. Manuals are designed to orient teachers on building creative appetite for science among students. Data shows that most of the activities organized by Science Clubs in Madhya Pradesh during last three

months were related to essay writing (girls 86 %, boys 81.7 %), poster competition (girls 72.6 %, boys 70.7 %), G.K. examination (boys 73.1 %, girls 64 %), and quiz contests (boys 60.1%, girls 55.9 %). In the Focused Group Discussions also, the participants talked about the type of activities organized by the Science Clubs. The outcomes of these discussions were broadly similar to the information given by the students in their questionnaires. Broadly, these included; poster competition, models development and exhibition, Quiz, Seminar, AIDS day, Science fair, Science Day, Blood donation camp, Know India (*Bharat ko Jano*) etc. From the responses of the students it appears that the Science Clubs were fairly regular in holding their programme and activities. Overall, 93.8 % boys and 81.3 % girls students have observed regularity in activities of the Science Clubs

It was agreed that science clubs have played a significant role in inculcating an interest and build understanding about world of science among students. Majority of students perceive major benefit of Science Clubs in providing knowledge which is not available in their routine syllabus. Around 80 % students opined that Science Clubs are giving information beyond syllabus. This perception was stronger among boys (86.1 %) of XI & XII as compare to girls (84.6 %). Stimulation of the spirit of curiosity, enquiry, innovation and creativity through activities were among the key objectives of the Science Clubs. Majority of students have vehemently admitted that Science Clubs have benefited them in this respect. More than 90 % boys and 88.4 % girls have responded positively on these issues.

Science Clubs have become a vehicle for creating interest and enhancing knowledge is well accepted by the monitors by giving an overwhelming response in favour of this statement. Further, a large proportion of students have also observed that the Science Clubs have also helped in building understanding of scientific world and gain in knowledge. Nearly half of the students have observed a significant increase in their knowledge by participating in the activities of Science Clubs. Around 44 % felt a normal increase. Class-wise, the students of class 11th & 12th observed a large increase, where as the students of class 8th -10th are admitting “normal” increase in knowledge. In FGDs also students have accepted that the activities of Science Clubs has enhanced their knowledge about Science as it gives information about new initiatives in the field of Science and imbibed learning through experimentation. Also the prize given to the winners of Science Club’s activities boost their interest in science. The information disseminated by Science Clubs on diseases, treatment, formation of new things, use of on-line technology, new inventions were particularly appreciated by students.

Conclusion

The students under study have shown a very high interest in science (over 96 %). The interest was particularly large in Biology, Physics and Chemistry in that order of preference. Around 90 % of the students were aware of existence of Science Clubs in their schools. Most of the activities organized by Science Clubs were related to essay writing, poster competition, G.K. examination, and quiz contests. Activities like exhibition, exposure visits were less common. Continuity and regularity in activities of any programme particularly in schools is very crucial to maintain the momentum and interest of the students.

The performance of science clubs is good but there is scope of improvement in several areas. Training of teachers is very limited. Teachers feel lack of capacity in coordinating and carrying out the club activities. There is a large need of training of the teachers. More than half of the students have suggested for add-on of new activities in Science Clubs. Increase participation related to Science Club activities should be encouraged. For the students, who have taken science as subject in class XI and XII, it should be compulsorily to become member of the Science Club. Schools need to motivate students to become member of the Science clubs by promoting competition at inter school level. Regular training programmes of Teachers (In-charge of Science Club) should be organized. Only science teacher should be the in-charge of Science club and their training needs should be assessed and addressed properly during training programmes. Refresher training programmes should be organized to update the knowledge and skills of the teachers.

Scientific temper of a nation depends on the extent of use of scientific knowledge by its citizen. In a self learning process of education system, science clubs plays an important role to incorporate better understanding of nature and diversity of information sources. Science clubs will enable students in critical thinking process and also to develop scientific and rational outlook.

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