

COMMUNICATING ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT IDEAS AMONG TEENAGERS

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ABSTRACT

To enhance the consciousness of environmental protection and foster the ideas of sustainable development among teenagers, some effective measures have been adopted in the process of science communication based on the feedbacks from youth, and in practice, the exhibition named “The Earth, Mankind, Challenges and Solutions” and the “Nationwide Teenagers’ Innovation Competitive on Environmental Protection” have been held successfully.

INDEX TERMS

Teenagers, Environmental protection, Sustainable development, Exhibition, Creativity match

INTRODUCTION

By the end of 2002, we noticed that with the rapid development of China’s economy, there had already existed more and more environmental pollution problems and the treatment would be very costly. But the severe situation was not recognized by the general public especially the teenagers who would be the future masters of the country. However, it takes time to make teenagers aware of the resource shortage, the environmental pollution and the essence of sustainable development. Therefore, it is necessary to achieve the following objectives: (1) to show the teenagers the proved environmental pollution phenomenon in order to form the correct concepts of environmental protection; (2) to foster the ideas of sustainable development with the successful cases of using renewable resources and reducing environmental pollution; (3) to enable teenagers to use the concepts of environmental protection and sustainable development to impact on their daily behavior; (4) to call for their enthusiasm to solve the environmental problems around and to show the responsibility with their own efforts and daily practice. To accomplish these objectives, China Science and Technology Museum (CSTM) and the Center for Environmental Education and Communication of State Environmental Protection Administration (SEPA) have held a series of science communication events among the young people, by allying with major mass media and some leading multinational companies, such as DuPont and Arrow, and utilizing the social effect of an exhibition entitled Scientific Development Vision in CSTM.

THE SCIENCE COMMUNICATION PROCESS

1. Understanding the real demand of teenagers.

Longtime surveys have been made among teenagers. It has been made clear that their impression on the education of environmental protection and sustainable development is as follows: lengthy texts and striking photos have made them feel dizzy, unable to rouse their interest. It seems that the setting and the atmosphere in the exhibition have brought a negative psychological hint to the teenagers. Although they have been aroused alertness to some degree by the pollution texts and photos, under the circumstances they do not know what to do and where to begin, and, some of them even feel pessimistic about the solutions to the environmental problems.

2. According to the feedback from the teenagers, science communicators have prepared an exhibition on environmental protection and sustainable development with new ideas: The Earth, Mankind, Challenges and Solutions.

A. The conception of science and humanity has been introduced from various aspects of daily life, and making teenagers feel that “environmental protection” and “sustainable development” is nothing beyond them. For example, a kitchen is set up in the exhibition hall and is equipped with some samples of ore mine, gas container, cotton and wheat ears, which are linked to cooker, gas stove, cloth and bread. To many teenagers, it is the first time for them to have seen these samples. In addition, the concepts of renewable resource and unrenovable resource are introduced beside. Gradually, the challenges of resource shortage we are confronted with are realized through further visiting. They are also conducted that the environmental pollutions, such as auto exhaust, environmental hormone, battery pollution and etc, will cause tremendous harm to people especially teenagers.

B. Realizing that most teenagers dislike the texts and photos of environmental pollution, we therefore have taken the following measures: we put 12 major problems related to the earth’s atmosphere, water environment, land and biosphere on a set of foldable display boards with simple texts and interesting cartoons. When teenagers have finished reading the surface layer of the 12 boards, their curiosity is aroused. As they find out the boards can be unfolded and each new layer displays another aspects of the predicaments in the earth environment. Their curiosity will motivate them to read one board after another. It is obvious that they are deeply touched. A big model of the Earth with 48 holes has been installed. From each of these holes a picture of environmental pollution can be seen. We named this model “Look at the scars on the Earth”. Teenagers seem to cast off their dislike of the environmental pollution photos and now rush to the earth model with great interest.

C. Paying attention to the interaction between exhibits and teenagers. For example, when the teenagers walk through a path in the exhibition area, stepping on the glass embedded in the ground, they will see some lighted cartoons with the themes of water saving, plants and other environmental protection items. In other place, when they see a new piece of water-proof and ventilated cloth, they will be told that the cloth is made of discarded milk bottles, and that the new recycled cloth can also be used to cover the wooden houses. Thus, the idea of material recycling has been transfused into them.

D. The successful sustainable development cases have been used to help teenagers to understand what the sustainable development is. For example, in our exhibition teenagers are given samples[1] of fast dissolving plastic bags, renewable corn-made fabrics, a 1 mm thin screen, hydrogen batteries, etc. During the process, they have been taught with five principles of sustainable development[2] and asked to do their best, <1.>to use the renewable resources; <2.> to reduce the consumption of fossil fuels; <3.>to design zero-emission production models; <4.>to recycle the thrown away products <5.> to research on new products based on the natural laws.

3. The “ Exhibition on the Scientific concept of Development ” sponsored by the Communist Party of China (CPC)’s Central Department of Publicity and China Association for Science and Technology (CAST)

aroused wide public attention in China. Warned by numerous pictures showing natural environment destruction in the exhibition, teenagers were still puzzled, not knowing what to do and how to do.

4. At this point, CSTM and SEPA's Publicity and Education Center held the Nationwide Teenagers' Innovation Competition on Environmental Protection, to inspire teenagers to find out environmental problems around them. They were conducted to ask questions such as: "Do the plastic balls they play pollute environment?", "Can egg shells be used for other purposes?", "Can grass be planted on the roofs of buildings?", "Is it necessary to build dams in our hometowns?"

After the important and interesting objectives were decided, students actively took up research, investigated and collected materials, proposed action plans and proved their feasibility. Finally, they harvested many unexpected results, to the astonishment of their parents, teachers, evaluation committee members and even themselves.

The Competition was in good accord with the essentials of environmental and scientific education. So, students who participated in the Competition felt their own potential, tasted the joy of success, and gave up their previous impression that scientific research was difficult. Obviously the event aroused their interests in both environmental issues and scientific research.

The series of science communication have shown two major characteristics during its implementation.

Firstly, every step of the series of activities has been closely connected to each other. The feedback from teenagers has been frequently collected and analyzed and the exhibition plan has been adjusted from time to time. The Innovation Competition on Environmental Protection was held on the basis of the analysis of the feedback from other exhibitions held earlier.

Secondly, various social resources have been combined together. There are numerous social resources: CSTM which has unique advantages in holding science communication exhibition; SEPA's Center for Environmental Education and Communication, which has been advantageous in providing environmental education materials; and several multinational companies, such as Dupont and Arrow. The advanced technologies of DuPont has enabled the exhibition "The Earth, Mankind, Challenges and Solutions" to be feasible. It's financial and other material supports have been greatly beneficial to the event. Arrow, which has provided financial supports to the Nationwide Teenagers' Innovation Competition on Environmental Protection. CAST and the Central Publicity Department of CPC have advantages in mobilizing, organizing and publicizing the social events, while the mass media has widely reported the events to call for people's curiosity in participation

EVALUATION

Science communication effect

1. Since November 2003 when "Earth, Man kind, Challenges and Solutions" was first opened to the public, the exhibition has received more than 660,000 teenagers from all over the country. Compared with other environmental protection exhibitions, teenagers have shown higher enthusiasm in this one. SEPA has referred the exhibition as a successful case of environmental protection to its nationwide subordinate departments.
2. The Exhibition on the Scientific concept of Development received a total audience of 160,000 within two months. Media reports of the exhibition surpassed 5000 pieces. The massive reports created a favorable atmosphere for teenagers to accept the concepts of environmental protection and sustainable development.
3. The Nationwide Teenagers' Innovation Competition on Environmental Protection covered 30 provinces, municipalities and regions of inhabited by ethnic minorities in China. More than 100,000 students in over

10,000 schools were involved. A total of 630 competition articles were received, including 273 from primary schools, 305 from middle schools and 52 from universities. Many competitors' achievements are worthy of further promotion.

Evaluation on the science communication

1. Series of science communication activities focused on environmental protection and sustainable development have made teenagers understand the situation of environmental pollution and resource shortage, the concepts of environmental protection and sustainable development. Meanwhile teenagers have learned how to solve the environmental problems around themselves with their own hands. Therefore, they have shown great enthusiasm in building the road toward sustainable development.

2. Some Teenagers began to reevaluate their everyday behaviors with the conception of environmental protection and sustainable development. However, to form healthy behaviors and environmental friendly practices needs more sustainable and higher-level education.

3. Chinese teenagers have been heavily loaded with their homework, and their science education has little relevance to their daily life. Nowadays, many students do not know why to learn and what to learn. Participating the science communication activities has played a positive role in promoting their healthy development.

A. The series of science communication activities were arranged in accordance with the trend of the world's science education[3]. The purpose for these activities was not only spreading scientific knowledge, but also promoting teenagers' understanding of the environmental issues and their passion to science. When they have realized that science could be used to solve the environmental problems around them, they would spare every effort to study science.

B. The series of science communication activities have a direct bearing on teenagers' psychological and thinking process. Students who took part the activities were activated with the world's advanced environmental protection harvests. By trying to solve environmental problems around them, many teenagers gained the experience in doing scientific research, thus their innovation potentialities, critical mind and deep-going scientific thinking developed step by step, they become more confident, active, and capable of solving practical problems.

DISCUSSION

To make science and technology communication effective, the resources of teenagers themselves should be appreciated and inspired. On the one hand, the organizers should be acquainted with plentiful information of certain field and its further development in order to control the speed and the trend of science communication activities, their main role should be steering the teenagers to determine a proper objective and to support themselves to take part in science communication activities by making suggestions and encouraging parents, schools, research institutes, libraries and so on to create the favorable social atmosphere[4]. Teenagers should also be encouraged to challenge the authorities when ever necessary, that is to say that young people should have a critical mind and radiative thinking so as to take actions on their own initiative. On the other, teenagers should not be regarded as passive receivers. They have their own experience and knowledge structure, when they are confronted with obstacles, they have their own choice and judgments even though they are quite young. We believe that teenagers have the wisdom and ability to deal with difficult situations effectively and miraculously if they have an interesting and practical objective.

CONCLUSION

1. In the process of science and technology communication targeting the youth sector, when the teenager's curiosity is ignited and made full use of , positive results can be generated even though the communication content is not so attractive or sometimes very boring. For example: in the case of the earth model named "Look at the scars on the earth".
2. Determining the reasonable objectives and steering teenagers to experience the scientific programs, is an effective way to guide youngsters to participate in science communication activities.

ACKNOWLEDGEMENTS

We would like to express our heartfelt thanks to DuPont for its 8 years valuable cooperation with CSTM, without its advanced technologies, financial and material supports, the exhibition "Earth, Mankind, Challenges and Solutions" focusing on the successful sustainable development cases would have been impossible. Our sincere thanks would also be due to Arrow for providing financial supports to the Nationwide Teenagers' Innovation Competition on Environmental Protection. On the whole, this successful science and technology communication among teenagers, is the fruitful result of collective wisdom of a great number of scientists and all those who are concerned about environmental protection and science education.

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