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Science Education for the Public

Hiroo Imura

The remarkable progress of science and technology in the 20th century has brought enormous benefits to humankind. Long and healthy lives, economic prosperity, and a pleasant and convenient living environment have resulted from technological progress based on advances in scientific knowledge. This progress will continue or may even accelerate in the future, because both the number of scientists and their activities are expanding throughout the world. We may expect, therefore, that science and technology will continue to contribute to the development of human society.

At the same time, rapid scientific advances may raise some difficult problems. First, the disparity in scientific knowledge between those in scientific and technical professions and those in other areas will continuously expand. This may create a communications gap between the two groups that could affect obtaining public consent on important issues, such as the use of genetically engineered plants or human embryonic stem cells. Second, the 21st century will be characterized by a knowledge-based society, and a knowledge of science will be required for many professions. Those who lack scientific knowledge will have fewer opportunities for good jobs. Third, the enormous increase in scientific information will become a burden for children who must study science. Already young people seem to be losing interest in science, and this trend may increase in the future. Over the past several years, enrollment in high-school physics courses in Japan has been decreasing, which suggests that many young people are losing interest in physics or avoiding subjects that require diligent study. Finally, scientific research in the next century will require increasing levels of public investment because sophisticated research is usually expensive. If the public loses interest in science or does not understand the importance of research, it will become difficult for scientists to obtain sufficient financial support.

Continuing science education is of great importance.

Because of these considerations, I think that we need to carefully review present science education at different levels and to improve it in order to meet the expected rapid progress of science in the 21st century. At the level of primary education, the most important task is to stimulate children's interest in nature. Naïve surprise at the wonders of nature will hopefully lead to a later interest in science. During their secondary education, students must learn logic and the principles of natural phenomena. They will gradually separate into groups of those who like and those who dislike science. It will be difficult to provide the latter students with the scientific basics that would be useful throughout their lives. This is also the case in university education. It is becoming a goal of general university education to give students who are not majoring in natural science and engineering some level of scientific literacy. In the future, all citizens, especially those expected to lead diverse areas of society, should have a sound basis for understanding the progress of science. Because the pace of progress will accelerate further, continuing science education for the public is also of great importance. Science journalists play an important role, but scientists should also make efforts to enlighten the general public with accurate reports on scientific progress explained in plain language.

Japan's Science and Technology Agency this year started a 3-year campaign to promote better public understanding of the progress of science and technology. It includes science festivals for young people, a robot olympics, introduction of advanced technologies through video libraries, construction of a new science museum (Science World), and so on. Science education for the general public is not easy, however. We have to study tactics and strategies to make science education an integral part of every stage of life, from children's primary education to lifelong learning for adults.

The author is a member of the Council for Science and Technology in the Prime Minister's Office of the Government of Japan.