

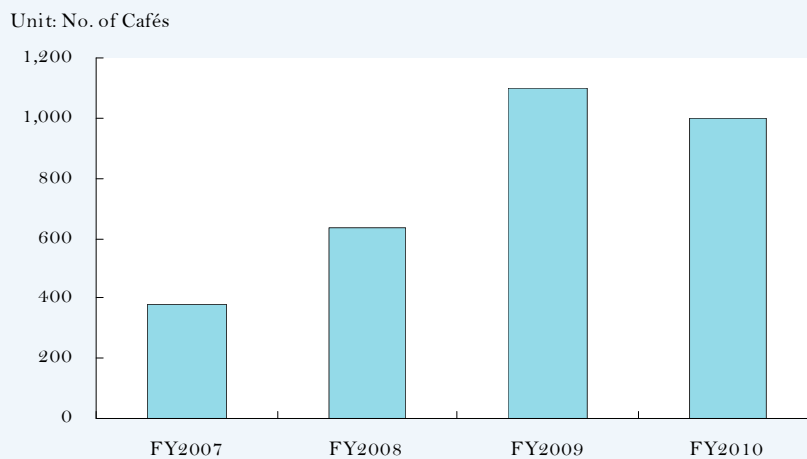


4) Science Cafés

In addition to the outreach activities mentioned above, there are also “science cafés” organized to provide a platform for society and researchers and engineers to establish contact with each other. The “science café” is a place for the public to communicate openly with researchers over a cup of tea, and is believed to have originated from the “Café Scientifique” in the U.K. and France around 1997. The Science Council of Japan actively promotes the science café as “a project to create a place where science experts and the public can talk freely about science in a relatively cozy location, such as the café.”

The first science café in Japan is said to have been held by the then-NPO Sunday University in Oct 2004. The number increased steadily since then, with the number on the Science Portal of the Japan Science and Technology Agency also increasing rapidly since April 2007 (Figure 1-2-23).

● Figure 1-2-23/The Number of Science Cafés Organized



Note: The number of this figure is the total number of cases found in the Science Café Calendar in the Japan Science and Technology Agency’s “Science Portal” (as of end March 2011). Because of the Great East Japan Earthquake on March 11 2011, the number of science cafés listed in March 2011 was fewer compared to the same period a year ago.

Source: Created by MEXT based on data from the Japan Science and Technology Agency

In addition, the varieties of organizers of science cafés have also increased. Besides research institutions and universities, the Science Council of Japan, government agencies and local governments, foundations and NPOs have also organized them in various parts of Japan. Some of these cafés include many grass roots activities organized not by university lecturers, but by student clubs, local governments and civic volunteers in partnerships, or activities organized and operated by the residents themselves.

The benefits of organizing such science cafés around Japan include the low cost and easiness of organizing, easiness in getting the public to participate, including people with little interest in S&T, and the high satisfaction level of the lecturers.



[Column 10] Civic Dialogs on Biotechnology – Efforts of Life Bio Plaza 21

“Biotechnology,” S&T that is tightly connected to human life, has a very close relationship to the daily lives of the public in areas such as medical, food and the environment. But, as seen in the public opinion poll mentioned earlier, advanced biotechnology such as recombinant DNA technologies and cloning technologies were also the top concerns among the “fields where developments of science and technology are worrying” to people.

At the NPO Life Bio Plaza 21, citizens provide easy-to-understand information on biotechnology and its products and services using websites and newsletters, and conduct events. At the same time, it also conducts many activities such as providing a platform for communication between the public and researchers in order to promote communication between citizens and researchers on the status of the most advanced biotechnologies and safety issues.

Specifically, they have organized science cafés on biotechnology more than 130 times so far, experiment classes for the public (together with Ibaraki University and the Tokyo University of Agriculture and Technology, they conducted specific DNA detection experiments and genetic modification experiments for the participants), and parent-child biotechnology classes. Through handling materials and topics closely related to our lives and from a citizen’s perspective, these activities provide opportunities for the participants to feel, think and talk about the usage of biotechnology and its significance.

In addition, they also 1) conduct farm visits, where participants go to normal vegetable farms and genetically-modified crop farms and taste the genetically-modified crop to experience genetic modification technology first-hand, and provide opportunities for everyone to discuss related issues, 2) organize public dialogs for the public who wish to have deeper discussions, and to provide “Dialog Forums” (60 times so far) where the speakers who are researchers and the participants can speak frankly.

Chief Researcher, Yoshiko Sassa, says, “We want to provide both positive and negative information accurately and fairly to the citizens. By doing this, citizens can think for themselves and choose the correct information to base their actions upon. In addition, we also want to think together with the citizens how to create a society in which we can co-exist with biotechnology so that young undergraduate and graduate students can get involved enthusiastically in the most advanced fields of biotechnology. It is therefore, very meaningful to deepen the communication on S&T with researchers, people in the industries and the public.”

5) Efforts of the Media

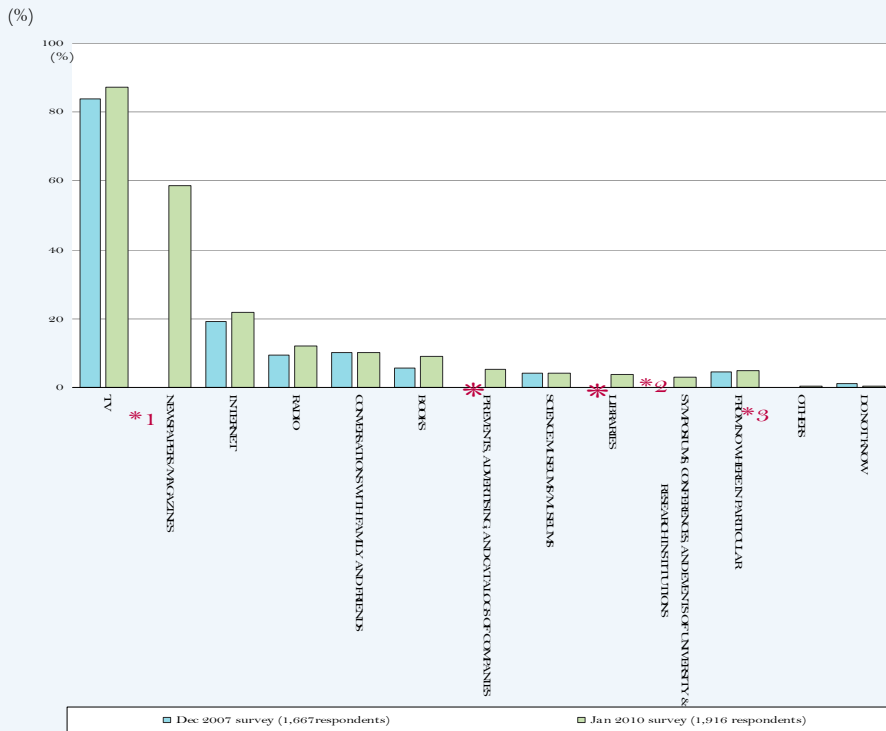
There are many information sources of S&T communication, for example, mass media such as the TV, newspapers, the Internet, various magazines, books, academic journals, displays, seminars and other events at science museums and museums, and conversations with friends and family. In particular, many Japanese get their S&T information from the media, through the TV and newspapers (Figure 1-2-24). This shows that in order to improve the communication between society & the public and researchers & technicians, the media is expected to play an important role in providing difficult S&T contents in easy-to-understand ways.

In the National Institute of Science and Technology Policy’s “Comparative Surveys of the Public Attitudes towards and understanding of science and technology in Japan, the United States of America (U.S.A.), and the United Kingdom · Comparative Survey Using the Internet” (Mar 2011)” it was found that only 16.3% of Japanese respondents “regularly watched” science and nature related TV programs, while 37.8% of Britons and 30.2% of Americans did so (Figure 1-2-25). It is therefore expected that media activities highlighting the joys of science to a wide spectrum of the audience will be improved, including future transmission of information from researchers, technicians and the government to the media.



● Figure 1-2-24/Ways to Get Information on S&T

Questions: How do you usually get information on S&T? (multiple answers allowed)



Notes: 1. The question “Where do you usually get your knowledge about S&T from?” was asked instead in the December 2007 survey. In addition, “through work” (8.0%) was also given as a choice.

2. In the December 2007 survey, “newspapers” was 58.3%, “general magazines (weekly, monthly magazines)” was 11.0%, and “academic journals” was 4.4% (*1), “symposiums, conferences” was 2.3%, “open houses and visits of universities and research institutions” was 1.6% (*2). “From nowhere in particular” was also a choice.

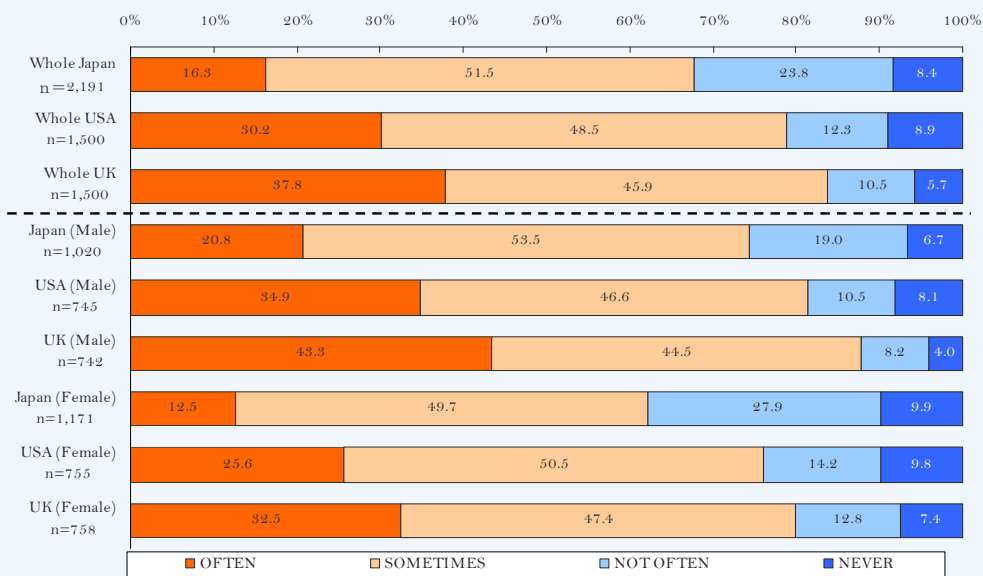
3. In the February 2004 survey, “PR events, advertising, catalogs of companies” and “libraries” were not given as choices.

Source: Cabinet Office “Public Opinion Poll on Science and Technology and Society” (January 2010 Survey)



● Figure 1-2-25/Frequency of Watching TV Programs on Science and Nature

Question: Do you watch TV programs related to science and/or nature (as programs with educational value)?



Note: Same as notes 1. and 2. for Figure 1-2-6.

Source: National Institute of Science and Technology Policy's "International Comparison of the Public Attitudes towards and Understanding of Science and Technology -Comparative Study of Internet Survey in Japan, the United States of America, and the United Kingdom " (March 2011)

Furthermore, TV has a huge influence on society and the public, as a 1% household viewership rating for any program in the Kanto area means that approximately 176,000 households actually watch the program when it is being shown. As such, it is hoped that through a high-quality science media, the joys and interesting aspects of science can permeate even to the levels of the public with little interest in S&T. With an aim to stimulate, spread and increase society's interest in S&T, the "Science and Technology Film/Video Festival" started in 1960, and gives out awards to excellent films and videos on S&T, and improves people's knowledge on S&T. It is hoped that through such award systems, the media will be encouraged to produce better quality films and videos on S&T for society.

In addition, the Japan Science and Technology Agency also provides a free (or no additional viewing charge required) S&T program called "Science Channel," which it plans and operates, so that "children and adults alike can enjoy while feeling 'science' in topics ranging from our daily lives to the most advanced technologies."

On the other hand, the media also plays a very important role in S&T communication because it has the responsibility to provide such information fairly and accurately to society and its citizens.

The Japanese Association of Science & Technology Journalists (JASTJ)¹, founded in July 1994, has been

¹ The Japanese Association of Science & Technology Journalists (JASTJ) is made up of approximately 200 members, mainly science journalists (as of Mar 2011). It grew from an observation among related personnel at the inaugural World Conference of Science Journalists (science journalists from 41 countries participated) held in Tokyo in Apr 1992 that independent science journalist organizations exist and work together to improve themselves in many countries, and that the time was ripe for such an organization to be created in Japan. The JASTJ was also involved in the establishment of the World Federation of Science Journalists, a league of international science journalist associations. When the Federation's constitution was created in 2002, it became one of its first member associations and in the 1st Conference held in Canada in 2004, it joined the other founding members to call upon associations in many countries to become members. The Medical Journalists Association of Japan is also a member of the World Federation of Science Journalists.



conducting study meetings on the latest science topics almost every month with the aim to improve science journalism in Japan, and also organizes many visits to research facilities, and symposiums to discuss the roles and functions of the news media in topics such as the environment, space, disasters, nuclear energy, and science publicity. It also provides information on its website, and reflects on past S&T projects and science reporting in the media. In September 2002, it also started the “Science Journalist Cram School” whereby famous researchers and current newspaper reporters, TV commentators and producers are invited to give talks with an aim to nurture human resources who can explain basic and advanced scientific knowledge in an easy-to-understand way and produce high-quality information (410 people have participated so far). In 2005, it established the “Science Journalist Award” to honor individuals who have made excellent contributions in reporting, publishing or producing visual images related to S&T. A total of 28 journalists and researchers have so far been given the award over the past 5 years. In addition, the “Medical Journalists Association of Japan” and the “Japanese Forum of Environmental Journalists” also carry out their activities very actively.

(2) S&T Communicators Supporting S&T Communication Activities

As seen earlier, S&T communication activities which connect society with S&T are actively held in various parts of Japan and plans are underway to increase these activities. People who play an important role in these activities are the S&T communicators and they include the following types of people:

- Staff in science organizations such as science museums and planetariums
- Science educationists (school and social education), library staff handling science books
- Personnel in charge of research planning, publicity and CSR¹ activities related to S&T in organizations such as government agencies, universities, research institutions and companies
- Media personnel handling S&T news
- Writers, editors of science magazines, and producers of science programs on the TV, radio or the Internet
- Personnel and volunteers in various organizations involved in conducting S&T activities such as laboratories in local areas, science shops (Science and Technology Resident Consultation Rooms) and science cafés.

It is essential that the function of the bridge between society and the public and researchers and technicians be strengthened so that more people can feel the relevance of S&T and actively seek to get involved in it. Therefore, the performance of the above-mentioned S&T communicators as people who can bridge the gap is highly anticipated. Many activities have, so far, been conducted in research institutions such as universities, science museums and museums to train S&T communicators.

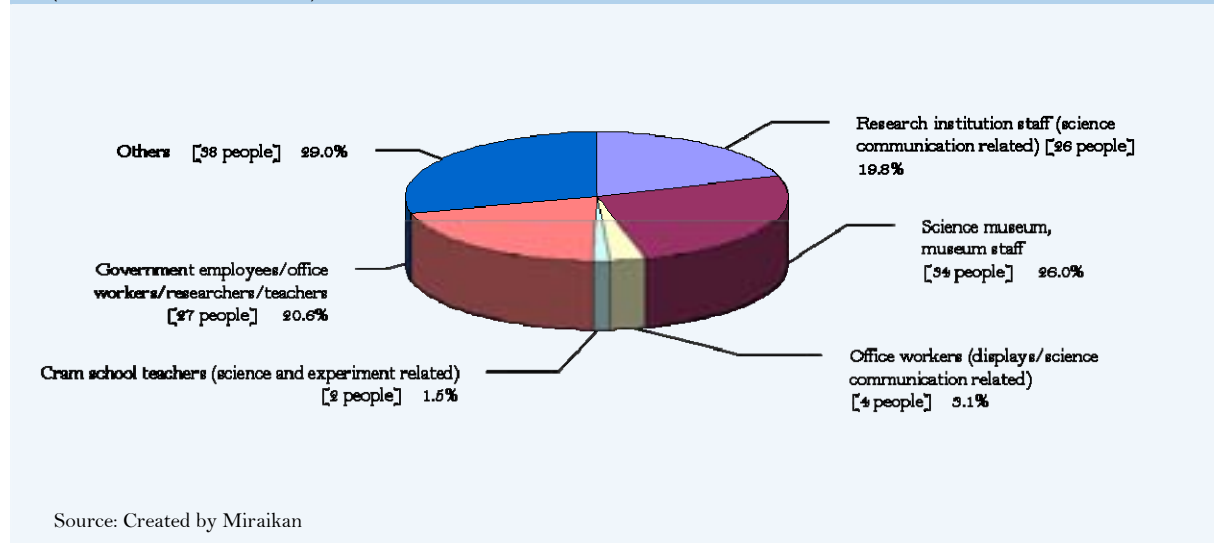
The Miraikan (National Museum of Emerging Science and Innovation) leads other institutions when it started nurturing “science communicators,” people who support S&T communication activities in various social situations, since 2001. These “science communicators” are hired on a 5-year contract, to investigate the latest trends in S&T, conduct explanations and demonstrations at the display floors, plan and produce events and publicity for the displays. In addition, they also nurture their ability as S&T communicators who can play active roles in different social situations by exchanging information with domestic and foreign

¹ Corporate Social Responsibility



people involved in S&T communication activities, and establishing networks. About half of the “science communicators” trained are involved in S&T communication work in research institutions, science museums, and museums (Figure 1-2-26). In addition, the Miraikan has been organizing the “Science Communicator Training Program” since 2005 for a variety of people involved in science communication, such as science teachers, researchers and publicity staff in universities, research institutions and companies, and staff of science museums and museums, in order to implement enriching S&T communication activities.

Figure 1-2-26/“Science Communicators” at the Miraikan and their Activities Thereafter (as of end March 2010)



From 2005, the Unit of Fostering Talent in Emerging Fields in Hokkaido University, The University of Tokyo, and Waseda University have been receiving support from the Special Coordination Funds for Promoting Science and Technology to nurture communicators and journalists who are knowledgeable in S&T (implementation period of five years up to 2009). In the post-implementation report on efforts of the three universities, the following points were rated positively: many students who completed their course went on to become S&T communicators and played active roles in society and the activities of the unit are continued and developed with the establishment of a new organization within the university (Hokkaido University), a new type of talent called “science interpreters” was proposed and a talent nurturing program was developed to link S&T to society (The University of Tokyo), a type of new S&T journalists who integrate humanities and science was defined, systematic curriculums were established, and the first graduate school of journalism in Japan was fully supported by the university continued even after the five years of the implementation period (Waseda University).

Furthermore, the National Museum of Nature and Science has been organizing the “Science Communicator Practical Training Program” since 2006 targeting mainly graduate students and training them to become talents who can bridge the gap between science and the public in a variety of social situations.

In addition, many universities conduct seminars on the theoretical and practical aspects of S&T communication in order to nurture talents who have both knowledge and the ability to talk about S&T, for



example, Tokyo Institute of Technology’s “Tokyo Tech Science and Engineering Communication,” Nagoya University’s “Laboratory-based Training of Science Communication,” and Osaka University’s “Introduction to Science and Technology Communication.”

In recent years, volunteers in science museums and museums and the NPOs have been receiving a lot of attention as people who play an important function in providing topics related to S&T from the standpoint perspective of society and the public, and connecting society with S&T. For example, there are actually 352 people at the National Museum of Nature and Science and 704 people at the Miraikan who worked as volunteers introducing and explaining the exhibits to the visitors.

These people have a very important role to play in promoting high-quality S&T communication activities to all corners of Japan and it is hoped that they will play more active roles in the future.



[Column 11] Students who have Completed the S&T Communicator Training Course and Play an Active Role in Various Situations

Ms. Ayano Obayashi from Mito City, Ibaraki Prefecture, was among the students to complete the second “Communicators in Science and Technology Education Program” (CoSTEP) (May 2006 – Mar 2007) at Hokkaido University. Living in Osaka then, she chose the CoSTEP elective course because it offered distance learning courses. After finishing a doctoral course in Particle and Astrophysical Science at the Graduate School of Science, Nagoya University, she worked for three years at the Nishi-Harima Astronomical Observatory at Hyogo Prefecture. She left work after her marriage and for a while, devoted her time to taking care of her family. A contact with one of CoSTEP’s specially appointed teachers through a blog led her to decide to study S&T communication systematically and carry out such activities with the public. After completing CoSTEP, she set up an experiential classroom called “Let’s Listen to the Stars” for infants and children (0–3 years old) and their parents at the Child Care Support Center in Sakai City, Osaka Prefecture where she lived. She continued her communication activities with citizens even after moving to Mito City, where she set up the “Science Café Mito” in December 2010 together with her friends. “Information about medical issues, food and child care abounds, but there are very few opportunities for people to think about what information is accurate. It is important to provide a place for mothers raising their children to think and hear other people’s opinions about science because they have so few opportunities to do so. Into the future, I intend to organize science cafés which focus on topics linked to local needs, and expand the circle of communication with local residents who up till now have little contact with science,” says Ms. Obayashi.



Experiential Classroom
“Let’s Listen to the Stars”

Ms. Hiromi Minoda works in a cosmetics company and while studying at a science and engineering-oriented university in Tokyo, participated in the National Museum of Nature and Science’s Science Communicator Practical Training Program because she wanted people to be more interested in S&T. In January 2009, she became a certified science communicator and got involved in S&T communication activities. Thereafter, with the help from The Takeda Foundation, she set up the volunteer organization “Weekend Café de Science (WEcafe),” and since then has organized a few science cafés and hosted science events. WEcafe is targeted at the age of 20–40s working group and is held in science museums, universities and cafés monthly, with inventive themes such as “How not to be fooled by statistics,” “Learn Designing from Bacteria – Fungus Café: the Unknown World of “Shapes,” “Screws.” “I am learning how to get people who have no interest in science involved in getting a scientific way of looking at things while having fun,” says Ms. Minoda. The experience as a S&T communicator has also been put to good use in her job as a researcher at her company where it is her job to explain clearly to consumers about product technology and conduct factory visits for the public. Even after her transfer from the research and development department to the technology publicity department from April 2011, she continues to be the S&T communicator in her company. According to her, many of her course mates from the National Museum of Nature and Science are also making use of what they have learnt in their respective companies.



(3) Further Developments for S&T Communication Activities

1) Expanding S&T Communication Activities

As mentioned in the previous section, interactive communication between society and the public, and researchers and technicians means deepening the former group's understanding of S&T, and deepening the latter group's understanding of society by listening directly to what the public have to say. Through such communication activities, it is important for each and every citizen to cultivate literacy in S&T that will enable them to think independently, and to let the researchers and technicians know about their ideas, problems and questions without any reservation. As for researchers and technicians, the importance of communication is that it allows the public to understand and trust their research. It also allows them to work hard to explain the social significance and consequences of their research from the perspective of the public, and to show the significance of their research and S&T in general to young people and children who will lead the future, and at the same time, know about the thoughts and ideas of the public on S&T. In order for science, technology and innovation policies to work under the understanding and trust of the public, it is important to expand such interactive communication activities, including the expansion of types of participants and the dimensions of such "interactivity". As a precursor to realizing two-way communication, it is necessary for specialists such as the government, researchers and technicians to provide credible information speedily and accurately to society and the public so that knowledge can be shared by all.

Furthermore, it is also pointed out that there is low incentive to conduct outreach activities as such activities do not necessarily affect the evaluation of researchers currently.

According to the Research on the "Promotion of Public Understanding of Science and Technology and Science communication" (research entrusted by MEXT, March 2009), society's awareness of S&T communicators is very low¹. Furthermore, more than half of the universities and research institutions surveyed currently do not employ a full-time S&T communicator, and only about half of the universities and science museums who responded intend to hire one in the future. On the other hand, close to 90% agreed that "It is necessary for research institutions such as companies and universities to conduct S&T communication activities," showing that many people recognize the importance of communicating research activities and the results to the public in easy-to-understand ways. Into the future, it is therefore important to devise policies that will raise society's awareness of S&T communication activities through their communicators. In addition, as the percentage of the average annual working hours allocated to research decreases for university lecturers², it is therefore vital for the various research institutions to nurture full-time staff to carry out S&T communication activities and to carve out a clear career path for them so that they can share the responsibilities with the researchers, as mentioned previously.

2) Efforts to Further Promotion of Interactive Communication

In the future, it is important to return the achievements of S&T to society, and for researchers and technicians to gain the sympathy and understanding of the public and work with society to further develop

¹ This survey sampled 1000 people from a Web Monitor Survey and followed closely the population distributions of the prefectures and the male/female ratio captured in the National Census.

The survey found that less than 1% of the Japanese public knew the word "Science and Technology Communicator", showing that social awareness of science and technology communicator as a profession is very low.

² MEXT's "Survey on Full Time Equivalent Data in Universities, etc." (Sep 2009)



the country's S&T. For this, it is vital for researchers and technicians to develop an interactive communication with society and its people after re-confirming the relationship of S&T, including its negative effects, with society, the economy, politics, etc. and sincerely dealing with the ethical, legal and social effects of their research on society.

On June 19, 2010, the CSTP released the "Promotion of the 'Dialogue on Science and Technology with Citizens' (Basic Course of Action)" in order to actively promote interactive communication activities for researchers and technicians to explain to society and the public their research and achievements in an easy-to-understand manner and to give hope to the future. The Basic Course of Action also clearly urged the relevant government agencies and funding organizations to

- include, for the time being, the item "Dialogue on Science and Technology with Citizens" in forms for applications of research funds of more than 30 million yen per year;
- introduce a system whereby part of the research fund is allocated to "Dialogue on Science and Technology with Citizens";
- assess "Dialogue on Science and Technology with Citizens" in the mid-term and end reports and universities and research institutions to
- have a support system for full-time staff with specialized knowledge on S&T communication and for S&T communicators and a cooperation and support system focused on the region;
- confirm difficulty and satisfaction levels through questionnaires, and maintain high-quality activities.

The Basic Course of Action states "researchers engaged the Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST) should start the 'Dialog on Science and Technology with Citizens' first," and as part of this initiative, the Japan Science and Technology Agency opened the "FIRST Science Forum – Future Uncovered by Top Scientists and Youths," an event for scientists who are working on the FIRST Program¹ and the youths.

The Japan Science and Technology Agency aims to provide chances for the Japanese public to know S&T and deepen their interest and understanding in the subject. It does so by supporting the experiential and dialog-style communication activities of various groups such as science museums, museums, universities, colleges of technology, public research institutions, local government, public organizations, NPOs, and individuals, and the construction of cooperation networks among organizations seeking to share information in regions in order to activate the local S&T communication activities and the development and promotion of S&T activities through nation-wide networks.

¹ Funding Program for World-leading Innovative R&D on Science and Technology