SCIENCE CAFE AS AN INCUBATOR OF SCIENCE COMMUNICATORS: CHALLENGES OF CoSTEP

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Abstract

Communicators in Science and Technology Education Program (CoSTEP) at Hokkaido University, Japan, started a monthly Science Cafe as a part of its curriculum in October 2005. The uniqueness of our cafe is that organizing the event itself becomes a way of leaning PCST. In other words, students of CoSTEP are learning how to design and manage dialogic events on scientific or technological topics by operating actual events. The Cafe by CoSTEP is the first regular science cafe in the region, and it gathers more than 100 participants in each event. So far, it featured topics such as astronomy and extra-terrestrial life, world heritage and science (industrial heritage), secrets behind the success of Finnish science education, earthquakes and tidal waves, utilization of snow, etc. The students of this cafe practicum have to learn how to choose topics and themes, write project documents, approach speakers, and design the program. Through this project, we found that Science Cafe can function as an incubator of science communicators who can organize and facilitate dialogic events on science and technology. Combined with lectures, seminars and practical trainings on science and technology communication, the students are learning the basic and practical skills of PCST.

Keywords: science cafe, science communicator, project based learning (PBL)

1. Introduction

Communicators in Science and Technology Education Program (CoSTEP), Hokkaido University, Japan, started a monthly science cafe (Science Cafe Sapporo) in October 2005 in order to provide our students with a field of training as science communicators. Science Cafe is a dialogue event where scientists or researchers talk with citizens on scientific or technological topics over a cup of coffee. Science cafe are said to have started originally in 1997 in UK, and it spread throughout the world in the last decade. The concept of science cafe has prevailed in these years in Japan, and there are about 10 regular science cafes hosted by universities and NPOs (Non-Profit Organizations) around the country. Science Cafe Sapporo, which the authors have organized monthly since October 2005, is one of such cafes.

One of the main characteristics of Science Cafe Sapporo is that the purpose of the events is to provide our students with a field of project-based learning (PBL) as science communicators. Organizing science cafes requires a comprehensive skill including information gathering and research on the topic, planning, copy writing, publicity, site management, facilitation, oral presentation, and so on. To host a successful science cafe, we need to invite speakers: scientists or researchers who would talk attractively on their research or their fields of expertise. Before approaching the speakers, we primarily need to identify the themes or the topics to take up in the event. In addition, we have to gather people to participate in the event, and in order to get participants, we need good public relation activities. We also need to prepare the site, especially to find out suitable venues (cafes, bars, restaurants, bookstores, etc). In the curriculum of CoSTEP, the students are expected to develop such skills through the production of a real cafe event on the OJT (On the Job Training) basis.

In this paper, we would like to outline how Science Cafe Sapporo takes place and describe and analyze how the cafe events provide the opportunities for students to improve their skills of science communication.

2. Outline of Science Cafe Sapporo

2.1 What is Science Cafe?

Science Cafe is a dialogue event where scientists or researchers talk with citizens on scientific or technological topics over a cup of coffee. Science cafe are said to have started originally in 1997 in UK, and it spread throughout the world in the last decade. Science Cafe is also called Cafe Scientifique, especially in Britain and France. The concept of Science Cafe (Cafe Scientifique) has prevailed in these years in Japan, and there are about 10 regular science cafes hosted by universities and NPOs (Non-Profit Organizations) around the country. Science Cafe Sapporo, which the authors have organized monthly since October 2005, is one of such cafes.

According to the founder of Cafe Scientifique Leeds, UK, Mr. Duncan Dallas, “Cafe Scientifique is a forum for debating science issues, not a shop window for science. We are committed to promoting public engagement with

science and to making science accountable." Every Cafe Scientifique and Science Cafe seems to have the same spirit of "3D- dialogue, debate, and discussion" as Miller tactfully summarized [1].

2.2 Science Cafe Sapporo

Science Cafe Sapporo basically takes place on the evening of every second Friday in the foyer of a bookstore in the center of Sapporo City. Sapporo is the biggest city in the north part of Japan with a population of 18 million. Hokkaido University is situated in the center of Sapporo City.

There is no charge admission for Science Cafe Sapporo, and the participants can buy drinks at the coffee shop in the foyer and join in the dialogue with their own drinks. Every time 100-200 participants join in the cafe.

The cafe events usually start at 6 p.m. with the opening remarks of the facilitator, and right after that the guest speaker(s) of the night give a 15 or 20 minutes speech on their research topics or fields of expertise. Then, we have a question-and-answer session for about 20-30 minutes followed by a ten minutes break. After the break, we have a discussion session where the participants and the researchers can have face-to-face discussion.

2.2 Topics and Speakers

From October 2005 to April 2006, we have hosted following seven Science Cafe events. The topics were Astronomy, World Heritage, Finnish Science education, earthquake disaster prevention, utilization of snow, DNA, and demography.

The production team of the cafe consists of the teachers and students of CoSTEP: about 20 members altogether. The team searches for the suitable guest speakers for the topics of cafe events from Hokkaido University mainly, but sometimes from other universities or research institutes. In the four cafe events, we had guest speakers from Hokkaido University, our home university. In other three cafes, we invited guest speakers from other institutions.

In the first cafe event, which was held in October 2005, we had a famous astronomer as a guest because the Astronomical Society of Japan (ASJ) had a biannual congress in Sapporo. Following the talk of the astronomer, a group of graduate students of ASJ facilitated the discussion and created many dialogues.

In the next month, November, we had a historian of architecture as the guest speaker. We especially discussed the modern industrial heritage and its relation to industrialization and modernization. We also discussed the possible World Heritage in Japan and Hokkaido. And in December, we discussed the Finnish science education. While an expert in Finish education was talking to the adult audience, we provide a workshop for elementary school children based on the education method in Finland.

In January 2006, we debated with seismologists the possibility of earthquakes in Hokkaido and the proper preparedness for it. In February, we discussed the utilization of snow. It snows a lot in Hokkaido, so it is very attractive and important issue for the public. In March, we discussed DNA. In the cafe, CoSTEP students and volunteer graduate students provided short stories and facilitated dialogue with the audience.

Table 1 Outline of the previous Science cafes in Sapporo

	Topics	Guest Speakers	Participants (approx.)
October 8, 2005	Astronomy	Jyunichi Watanabe (astronomer)	150
November 11	World Heritage and Science (Industrial Heritage)	Shigeyasu Ikegami (architecture historian)	100
December 9	Finnish Science Education	Fumihito Ikeda (knowledge scientist)	150
January 13, 2006	Earthquake, Tsunami, and Disaster Prevention	Minoru Kasahara & Yuichiro Tanioka (seismologists)	150
February 10	Utilization of Snow	Masayoshi Kobiyama (mechanical engineer) et al.	150
March 10	DNA	Shin Tochinai et al. (biologists)	200
April 22	Declining Birthrate and Demography	Noriko Tsuya (demographer)	

2.3 Two-way communication

The main purpose of our education program, CoSTEP, is to practice the two-way communication between science and society. Science Cafe Sapporo has some strength to fulfill the purpose.

First, it is face-to-face communication. Face-to-face communication is the most fundamental two-way communication between people. In the Science Cafe, the public can meet the scientists (or experts); on the other hand, scientists (experts) can meet the heterogeneous publics. This unusual meeting itself is very rare in our every day life. Moreover, we have facilitated the communication between speakers and the audience. The students of CoSTEP are

making use of time and space, the introductory session, the pamphlet, the images, and many more. We also try to spare discussion time as much as possible.

Second, it can be connected to media communication. Science Cafe Sapporo has been featured frequently in the local newspaper, radio program, and TV program. Appearing on the media does not necessarily lead to the two-way science communication; however, by connecting Science Cafe to the different media, we believe that we can improve the two-way communication between science and society. We have also broadcasted the contents of every Science Cafe event in the community FM radio program. In one of the events, we used a weblog system for following up the discussion after the event. We think we still have more possibilities according to the development of media technologies.

Third, it develops the communication with the neighboring community. In other words, organizing Science Cafe outside the university may change the image of academia and scientists and may lead to create more two-way communication between the university and the local community. More scientists and exerts are engaging in the public debate, more citizens will understand the content of science and scientists as human being or their neighbor. Although the influence by a Science Cafe is very small, we believe that the idea and practice of Science Cafe can create the new culture of science.

3. Science Cafe as a Material for Project-based Learning (PBL)

3.1 Production Work of Science Cafe

In our cafe practicum at CoSTEP, the students join in the project team and work on the production of cafe events in collaboration with other students and teachers. In the last term of CoSTEP (from Oct. 2005 to Mar. 2006), the team had about 20 members: 5 students and 3 teachers as core members, and about 10 as assisting members. In our program, the students start to work as apprentices in the team, taking charge of parts of production work. After building up their experience as event directors through the apprenticeship, the students finally direct one entire cafe event from A to Z as a graduation work.

In general, the production of a dialogue event like science cafe consists of a wide range of tasks. Table 2 in the next page is such an example of task listing. If you host a cafe as a main director or a producer, you need to manage these tasks by yourself or let other people handle them. Each task calls for different combinations of communication skills. Of course, these tasks are intertwined with each other and it is difficult to divide them into parts, but when you try to teach the production of events, it is better to divide the entire work into small task packages. Thereby, you can first show the students how you handle these tasks, and then have them try it, finally let them handle it by themselves.

The production work of the dialogue events like Science Cafes is consists of four parts: overall management of the project, contents and program, publicity and visitor relations, and site management. In the first term of the cafe practicum at CoSTEP, the students at first worked as assisting staff members mainly in charge of visitors relations and site management. At the same time, they gradually took charge of the contents and program design with the educational staff. For example, in the cafe event held in December 2005, we featured Finnish science education with a knowledge scientist as a guest speaker, and at the same time in the venue, we held a workshop for elementary school children to experience a Finnish science class (see the picture below). At that time, the students took part in the workshop design and preparation in collaboration with the guest speaker and the educational staff of CoSTEP.

Also, for the cafe event in February 2006, the students themselves did topic research and searched for guest speakers and approached them, and in March, the students themselves managed to take charge of the entire production work of a cafe event, which featured DNA with biologists.

Science Cafe Sapporo “Finnish Science Education” (December 2005)

3.2 Science Cafe Practicum as Project-based Learning: from the Students’ Evaluation

The basic idea of the cafe practicum is expressed best by the concept of project-based learning (PBL). PBL is a kind of learning method in which "a question or problem serves to organize and drive activities; and these activities culminate in a final product that addresses the driving question." [2] In the case of Science Cafe Sapporo the question is how to create two-way communication on scientific or technological topics, and the corresponding end products are individual cafe events.

Just at the end of the last term of the CoSTEP, the authors asked the five students who participated in the practicum to evaluate the educative effect of the project. The evaluation of the students supported the advantages of science cafes as an incubator of science communicator. One of the students stated, "Through the practicum, I realized that the production of one event calls for a collective strength, including program design, site management, and so on," and another student said, "The Practicum provided me a good learning opportunity because the teachers and the students worked together on one project without distinction." Science Cafe is rather a new attempt in Japan, so the production work of the cafe is a kind of trial and error experiment not only for the students but also for the authors, who have participated in the project as educational staff. To discuss the plans of the cafe events, we have a weekly meeting with all the students and core educational staff members. We could say even the project meeting provides opportunities for practice-oriented learning.

Also the students learned a lot about the direction work of event production. Evaluation comments from some of the students: "I could say that, as a team, we were able to share a sort of tacit knowledge of project management," "I learned how to make project documents and manuals, and difficulties of schedule management."

On the other hand, the students' evaluation showed several problems of the practicum. The most important point is that there were not enough opportunities for the students to share actual production tasks. It was mainly due to the lack of time; for, the students at CoSTEP are basically part-time and they have their main business as graduate students or office worker. So it is really difficult for them to spare time for the event production, and the educational staff actually took core parts of the project. But we think that we can improve more the way we organize the project and divide the production work more meticulously into task packages so that the students easily share the work and improve the skill through practice.

Table 2 Task list of a cafe event

	Preparation	On the day and after
Overall management	Arranging project meetings Staffing Budget and schedule management Drafting the overall operating manual	Evaluation Updating the website
Contents and program	Research on the topics Search for guest speakers Writing the project document Conferring with the guest speakers Program design Script writing Preparing handouts	Attending the guest speakers Facilitation Program direction
Publicity and visitors relations	Planning publicity Updating the mailing list Preparing flyers and posters Distributing flyers and posters Sending e-mail Updating the website Preparing questionnaires	Reception, participants relations Collecting questionnaires Video taping Photographing Article writing Press reception
Site management	Hiring and checking the venue Designing the site	Site arrangement Arranging and operating equipments Audio and recording

4. Conclusion

As seen in the section 2, Science Cafe Sapporo has begun to attract popularity in the local community as a media of two-way communication in scientific and technological communication. The production of such dialogic events requires a wide range of skills of science communication, and our practice at CoSTEP shows that we can use Science Cafe as a material of project-based learning of science communication or the OJT of science communicators.

We also think that Science Cafe can also provide experts with a place of learning. Experts can also learn through the dialogue with cafe participants; for example, in the cafe event which featured utilization of snow, we asked all the participants to deliver their own ideas of snow utilization, and there were many interesting ideas coming on. One of the

guest speakers was a professor of mechanical engineering specializing in utilization of snow, and he said after the session that he was really enlightened through the dialogue with the participants.

In this sense, Science Cafe can be a place of learning for people of various positions.

* for those who want to learn to be practitioners of science communication (e.g. CoSTEP's students), Science Cafe provides the opportunity of project-based learning.
* for the experts who are invited as guest speakers, Science Cafe can be a place where they meet lay citizens, have dialogues with them, and understand what citizens think about the topics or science and technology in general.
* for the participants who visit Science Cafe, it can be a place where they meet scientists and other citizens, learn something about scientific or technological topics through dialogues with others.

The main purpose of CoSTEP's education program is to incubate practitioners of science communication, so the real evaluation of the educative effects of the cafe practicum largely depends on how our graduates will play active roles in the field of science communication. In this sense, we need more time for the precise evaluation of the practicum. Nevertheless, the practice of Science Cafe Sapporo shows that we can make use of a dialogue event as a tool for the education of science communicator. By participating in the cafe production project, the students would be able to master a wide range of science communication skills.

References

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