

OUTREACH ACTIVITY USING THE INTERNET TELESCOPE

HARUHIKO UEDA¹, YUKI YAMAMOTO², MINORU OMOTE³, SEIJI SAKODA⁴, AND KOUICHI TODA⁵

¹Faculty of Education and Human Studies, Akita University, 1-1 Tegata Gakuen-machi Akita City, Akita 010-8502 JAPAN

²Tohoku University of Community Service and Science, 3-5-1 Iimoriyama Sakata City, Yamagata 998-8580 JAPAN

³Keio University, 4-1-1 Hiyoshi Kohoku-ku Yokohama City, Kanagawa 223-8521 JAPAN

⁴National Defense Academy, Hashirimizu 1-10-20 Yokosuka City, Kanagawa 239-8686 JAPAN

⁵Toyama Prefectural University, Kurokawa 5180 Imizu City, Toyama 939-0398, JAPAN

E-mail: hueda@gipc.akita-u.ac.jp

(Received November 30, 2014; Revised May 31, 2015; Accepted June 30, 2015)

ABSTRACT

We here report on the outreach activity using the Keio University Internet telescope performed by Science agora 2012 and 2013 in Tokyo. Many visitors came to our booth and operated the Keio University Internet telescope, and our project was awarded the prize of the National Institute of Advanced Industrial Science and Technology. In addition, based on the questionnaire for that occasion, the usefulness of the Internet telescopes in outreach activities is considered.

Key words: Public Outreach, Science Communication

1. INTRODUCTION

The internet telescope is a system that performs astronomical observation by using unmanned telescopes installed in remote places, via the Internet. Since 2003, we have advanced the Keio University Internet telescope project which intends to install Internet telescopes in various places and to make use of them for astronomical education. Our system of the Internet telescope has been developed in collaboration with the GOTO INC.

Now, we have four Internet telescopes and the control server which send commands from users to the telescopes. These form a network (see Figure 1), which is called the Keio University Internet telescope network. The features of the Keio University Internet telescope can be expressed by three keywords. The first keyword is “anytime”. The Internet telescope enables us to observe the night sky anytime, because our telescopes are installed in the areas which have time differences. The second keyword is “anywhere”. Now, it is not too much to say that we can use the Internet all over the world. The user interface to operate the Keio University Internet telescope is realized on a web browser, and special software is not needed. The third keyword is “anyone”. The Keio University Internet telescope can be used free of charge without registration, therefore, anyone can use it freely.

The main purpose of the Keio University Internet telescope is to create an environment for carrying out astronomical education focusing on observations. Although many people recognize the importance of experiments or observations in natural science education, astronomical

education has a disadvantage in that an observation of the night sky is impossible during school hours even if there are real telescopes. The Keio University Internet telescope can overcome it and anyone use it easily. It will be a useful instrument for elementary and junior high school teachers who have difficulty in teaching astronomical fields.

Another purpose of the Keio University Internet telescope is to make an opportunity for people to get close to nature through the Internet telescope. If one tries to observe stars with a real telescope, one has to go to a dark place with little lighting at night. Moreover, it is necessary to arrange observational equipment on one’s own account. It may be also difficult for a beginner to look for a target star in the open sky. This means that observing stars with a telescope is harder than one may think. The Keio University Internet telescope, on the other hand, offers an environment where anyone can get close to nature easily, and observing stars through the Internet telescope is a first step for people to perform real astronomical observations. In particular, outreach activity using the Internet telescope is very meaningful for promote educational campaigns about natural science.

We report here on the outreach activity using the Keio University Internet telescope performed by Science agora 2012 and 2013 in Tokyo. Moreover, based on the questionnaire for that occasion, the usefulness of the Internet telescope in outreach activity is also considered.

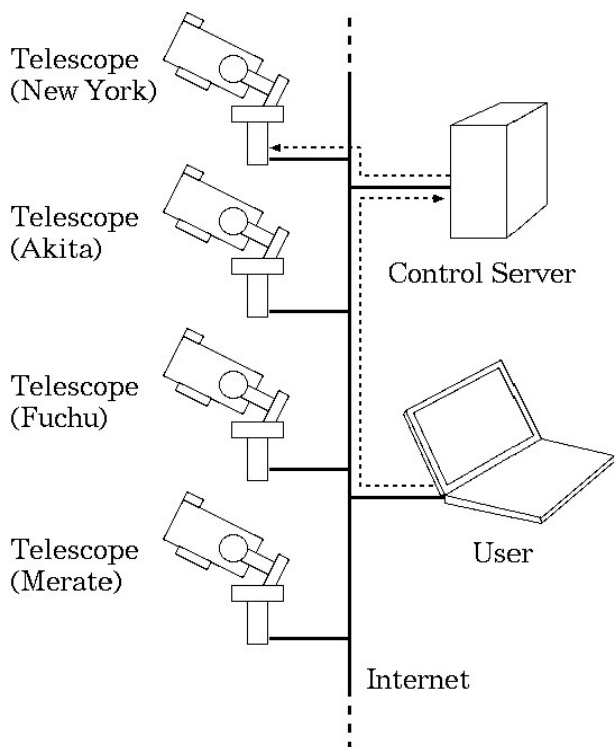


Figure 1. Illustration of the Keio University Internet telescope network. The solid line shows the network through the Internet. The dashed line shows a path of commands to telescope installed in New York.

2. OUTREACH ACTIVITY USING THE INTERNET TELESCOPE

Outreach activity using the Keio University Internet telescope was performed by Science agora 2012 and 2013. Science agora is an event that connects science with society. The Japan Science and Technology Agency is a sponsor from 2006, and it is held in Odaiba, Tokyo every year. As one of the aims of Science agora is to make a public appeal to the allure of science, it is suitable for scientists to perform outreach activity. It was in Science agora 2012 and 2013 that we participated. More than 260 projects made a presentation, and the number of visitors of this event is 6,225. Five halls were prepared, and our exhibition “Astronomical observation: anytime, anywhere, and everywhere” was carried out at the first floor of the National Museum of Emerging Science and Innovation.

We prepared an interpretive poster, some notebook PCs linked to a wireless LAN, and a tablet type terminal for this exhibition. Moreover, a partition, tables, and chairs were installed in our display space, and the poster as well as an illumination was attached on a partition. Many visitors made a line and were waiting at the entrance before the opening. The event hall and the road around the venue were crowded with visitors all day long. There were some visitors who checked the map of the hall in advance to be able to around the booths efficiently. Moreover, exhibitors made individualistic booths, and were excited to display their daily efforts of outreach activities.



Figure 2. The atmosphere of our booth. Our booth is in the front of the photo.

The main purpose of our exhibition was to let many people know about the Keio University Internet telescope. We also expected that by operating the Internet telescope and observing astronomical objects, visitors would understand the allure of it and would have an opportunity to get in touch with nature from our indoor booth. When visitors came to our booth, we first explained the outline of the Keio University Internet telescope. In addition, visitors observed the night sky in the daytime by using the telescope installed in New York. The main targets to observe were planets, famous stars and nebulae. Since the Internet telescope was not widely known, few visitors came to our booth at the beginning of the first day. However, visitors to our booth increased as time went on, and over two days more than two hundred people came to our booth and operated the Keio University Internet telescope. As a consequence, our project was awarded the prize of the National Institute of Advanced Industrial Science and Technology6 in Science agora 2012. The atmosphere of our booth is shown in Figure 2.

3. SUMMARY

It was a very good experience that we had practising outreach activities using the Keio University Internet telescope at Science agora 2012 and 2013. We reconfirm the fact that the strongest point of the Internet telescope is the characteristic of observing stars in the daytime. From our questionnaires, we may conclude that the Internet telescope encourages outreach activity.

If we introduce the present Keio University Internet telescope for outreach activity, there exist some points that must be improved. In the present system, one only chooses a star that one wants to see, and there is no information about the direction of it in the actual night sky. Moreover, there is not enough publicity for the Keio University Internet telescope. In our web site, most pages are only displayed in Japanese, and the design is too simple to fascinate visitors. In order to use the Keio University Internet telescope effectively at outreach activity, we have to improve above mentioned points.

However, observing the night sky in the daytime had been very difficult until the Internet became popular. The Internet telescope therefore has the possibility to change astronomical event and education fundamentally. We hope that the further improvement of the Internet telescope activates outreach activity, and offers an opportunity for people to get close to nature.

ACKNOWLEDGMENTS

I would like to thank visitors who came to our booth and answer the questionnaire.