INTERCULTURAL EXCHANGE & DISTANT COMMUNICATION TECHNOLOGIES: DESIGNING SOLUTIONS FOR THE GLOBAL EDUCATION FOR YOUNGER GENERATIONS

Marcos Sadao Maekawa (marcos@kmd.keio.ac.jp), Takehiro Suzuki, Wakako Satake, Keiko Okawa | Graduate School of Media Design, Keio University, Japan

ABSTRACT
In the morning of July 22, almost 500 students from 8 countries gathered at 13 different locations in Asia to participate in the Global Kids Eclipse 2009 event and shared the longest total solar eclipse of this century [1] and a multicultural exchange experience. The program was designed with two main objectives: to promote science and to have all participants feeling global. This event provided a common virtual space where the students —the majority of 6th graders—could watch eclipse images transmission from remote sites and also participate in other real-time interaction sessions. The participants were connected through a broadband and stable network platform and could interact with others using advanced technology of distant communication. This paper shows how the program and contents were designed and how this kind of activity can be designed and how it can be a key to bring up young students’ interests about multicultural exchange and other fields of study.

INTRODUCTION
Technology has been changing the way people communicate. In education, all fields are experiencing enormous transformations such as introduction of E-learning, online borders and use of digital tools such as computers, video and audio devices (such as iPod Touch, video cameras). These transformations have been helping education to overcome barriers such as time and distance, since information and content are accessible whenever and from wherever you are located. In the same time, the demand for a global focused education has been increasing. The economy, politics and the whole society have been becoming more globalized.
Many international exchange programs for children have been utilizing email, website or online borders, on a peer-to-peer basis. Multilateral interaction has been found in online games and business (video conferences), but not in compulsory education or children focused activities. A numerous literature about peer-to-peer can be found, but there is a big lack of information about multilateral real time communication applied to education.

Researchers from the Digital Youth Project explain in the white paper *Living and Learning with New Media* [2] that online spaces enable youth connect with peers in new ways. They also suggest that education may now have a new role: not only prepare for jobs and carrier but to guide youth participation in public life more generally.

The Global Kids Eclipse 2009 program came to propose an experiment in which the mixture of cultural exchange, global citizenship education and multilateral interaction provided a global experience designed specially for children.

**METHODOLOGY**
Global Kids Eclipse 2009 was an event which took place on July 22, 2009—when millions of people could witness the century’s longest total solar eclipse. While the event enabled students in Japan to observe the eclipse with others in the rest of the world through Internet broadcast, it also aimed to encourage intercultural communication and understanding among these children coming from different parts of the world.

FEELING GLOBAL - By connecting different places around the world remotely, it was expected the students to acquire a better understanding about the world (overseas, time difference, other countries) and to be inspired by the opportunity of interaction and sharing experience with other students from different backgrounds.

PROMOTING SCIENCE - In the occasion of the International Year of Astronomy 2009 [3]—declared by the United Nations and endorsed by UNESCO—GLOBAL KIDS ECLIPSE 2009 attempted to encourage student interest in science and astronomy and support the central theme of IYA2009: “The Universe, Yours to Discover.”
PARTICIPANTS - The targeted age was 6\textsuperscript{th} graders of elementary school and its equivalents in each location. The main reason was that, in Japan, introduction to astronomy is taught for those levels in education. But that was not an eliminatory factor and we had participation of younger and also universities students from some locations.

The countries that joint this session are: Japan, Brazil (represented by Brazilian school in Gunma Prefecture, Japan), Thailand, Indonesia, Bangladesh, Malaysia, Philippines and United Arab Emirates (represented by students at the main site).

PRE-EVENT
Astronomy and eclipse knowledge are very specific subjects. Since regular education curriculum varies from country to country, all locations were asked to hold a pre-event one or two weeks before the main one. In this pre-event, students would have lectures about the eclipse phenomenon and should create an art piece on the theme “My ideal Star/Planet”. This pre-event was held in Japan (including the Brazilian site), Indonesia (Manado) and Thailand.

In the case of the Kawasaki Municipal Sumiyoshi Elementary School (Kanagawa Prefecture, Japan), an astronomy specialist from the Kawasaki Municipal Science Museum for Youth gently held a lecture about the solar eclipse at the school’s sports gymnasium. The content for this lecture was based on a material produced and distributed by the National Astronomical Observatory of Japan (NAOJ) [4].

Part of this material was translated to Portuguese and taught to Brazilian students from the Brazilian elementary school Nippaku Gakuen located in the Gunma Prefecture, Japan. In other locations, the material and method were produced locally.

In the second half, students had the opportunity to express their thoughts and creative in the art session. They were asked to make a drawing in an A4 sized paper by the theme “My Star/Planet” and show the ideal place to live or they would like to visit. There was no limitation about the material used as well as techniques. In Japan, Japanese and Brazilian students were given material such as colored and white paper, crayon, colored pencil, glue, glittered or metallic paper and others.
EVENT
In the day of the eclipse, 13 locations were connected through the SOI (School on Internet) Asia using video and audio software developed for multilateral learning environments. SOI Asia Project [5] is an educational platform with 27 members (universities, educational organizations) in 13 countries. Utilizing this platform, it was possible to obtain support for organizational and technological aspects.

The general master of ceremony (MC) hosted the event from Hiyoshi, where 78 sixth graders from Sumiyoshi Elementary School and 18 university students from United Arab Emirates were gathered. In the same time zone were the Brazilian students from Gunma Prefecture, 100 km in the north of Tokyo.

2.1) PROGRAM SCHEDULE
The program schedule was design to take no more than 3 hours and basically divided in two theme: multicultural exchange and eclipse observation.

09:30 – Start
09:45 – Japan, Brazil, Philippines, Thailand, Indonesia, introduction
10:15 – Review about eclipse (to emphasize the science learning)
10:25 – Interaction Session – Introducing Art Works
10:55 – Break
11:05 – Observation eclipse at Japan (Yokohama and Gunma), quizzes
11:20 – Observation total eclipse relayed from Iwojima Island (South of Japan)
11:35 – Exchange of views and messages
11:50 – Photo Session
12:00 – Close

2.1) ICEBREAKING
One of the biggest concernment was regarding communication among children, mainly because of the language. For this first moment, a list of all participants and “Good Morning” translated in the respective idiom was prepared. Before introducing each country, all participants were invited to greet them in the respective language. For example, before Indonesia’s introduction, everyone greeted the Indonesian with a big “Selamat Pagi”. After this section, children felt more comfortable to participate and felt
the global atmosphere while watching participants in other parts of the globe. In the same session they could experience the first interaction and realized that they were connected to the world.

2.2) DRAWING PRESENTATION/OBSERVATION
Language is a big barrier in multicultural activities, even for adults. In the case of children, drawing was chosen as the main way of expression. Some pieces from each location were presented during this session and after each presentation, the participants were encouraged to make questions for the authors.

2.3) ECLIPSE OBSERVATION (live image broadcast)
Bringing high definition quality live images for students in the world was one of the biggest challenges of this program. To enable this mission, a special transmission network was designed based on the resources available in the SOI Asia platform and attend the largest number of participant sites.

Provided by the National Astronomical Observatory of Japan (NAOJ), live images of the total eclipse were received in the main site in Hiyoshi. Then, they were transmitted to other locations through the SOI Asia network. In each location, there were two projectors: one was dedicated to close up images and the other to project images from audience in other location.

2.4) QUIZZES
This session was held just before the eclipse observation and after the drawing presentation time. Participants were already comfortable with the environment and were excited to see the eclipse. It was an opportunity to prepare the students to the observation, making them remember names such as corona, diamond ring (the climax) and when the next total solar eclipse will occur.

2.5) SIMULTANEOUS INTERPRETATION
Since the majority of 6th graders around the world are not fluent in English, the best solution to make the multilateral communication flows was to design a simultaneous interpretation network. This design enabled interpretation in five languages to cover the
biggest number of participants: Japanese, English (for the Philippines, Malaysia and Bangladesh), Indonesian, Thai and Portuguese (for the Brazilian community in Japan).

The main site, located in Hiyoshi Campus of Keio University (Japan), the communication occurred in Japanese. At the same location, interpreters for English and Indonesian worked using the audio software RAT—developed originally for the SOI Asia project—and transmitting sound for the respective venues by different channels. In those cases, locations were instructed to receive two channels: the sound from the main venue and the simultaneous interpretation. In Thailand and in the Brazilian school in Japan, the event counted with interpreters in loco, then, they needed to receive only the main sound channel.

RESULTS / FINDINGS
This experiment was an opportunity to make trials and confirmations regarding educational programs for children introduced by new technologies.

SHARING - In this case, ICT helped to overcome the distance barrier and students from many different places could share not only the same content (total solar eclipse), but also the same space (images of each location), time (real time communication) and impressions (drawings).

HUMAN RESOURCES - From the management aspect perspective, this event could be managed to cover many locations in only two months of planning because of the existent SOI Asia human resources network. Plans and manuals with technical and management guidelines were distributed to all operators. They worked as local managers and had autonomy to suggest modifications on the program and adjust the guidelines to the local needs. This also helped the technical side, since they were already used with online lectures operation.

COMMUNICATION - There was no need of international trips or phone calls. All information sharing occurred by email, IP communications tools such as Skype and Microsoft Messenger and data transfer. This factor shows that ICT helped not only the
event itself but also in the preparation stage. Another factor to be pointed is documentation translation in other languages such as Portuguese and Thai. It made communication flow better among local communication and also the comprehension by teachers and other local stockholders.

INTERNET POSSIBILITIES - Although almost all sites were connected directly to SOI Asia, schools in Bangkok and Gunma (Japan) used a common broadband internet connection. This proved that it is possible to hold multilateral communication programs like this using common computers and regular broadband connections without compromising interactivity.

QUIZZES - Eclipse quizzes played a special role in the event. This was one of the moments when the participants became more enthusiastic. They were very curious about the questions and when asked who knew the answer, students rapidly and angering raised hands. During the transmission, they cheer each step of the eclipse saying its name and clapping hands.

DRAWING OBSERVATION – One of the most impressive moments was when an Indonesian boy’s work was enthusiastically welcome by warm applauses and a great cheer by all children in all locations. Soon, they started raising hands to make questions, including the usually shy Japanese students: “What did you use to draw?” or “How long did you take to make that piece?” The author replied: “I used crayon and it took me about one hour and a half to finish” and once again children reacted with a shout of surprise and joy.

Another draw from Thai was very well received. “My ideal planet is beautiful and with very pure and clean air. If you breathe that air, all your diseases will heel,” explained the student. A Brazilian girl said that her colorful art piece represents a planet where all countries are gifted with freedom and love.

According to Takashi Naoi, teacher of arts for elementary students and the Arts Exchange interactive session’s MC, this was a very important experience not only for the children, but also for his profession. In his article for the [6], Naoi says “everyone
knows that it is very this was the first time he saw children asking each other about themes and messages included in each art piece.” About the reaction of usually shy Japanese children, “Even when asked not usual questions, Japanese young students were doing their best to reply,” Naoi adds.

Another aspect pointed by Naoi in the article was the exchange aspect. He explains that the cultural exchange aspect of this event was very successful and this reflected in the surveys within the participants. Children had the chance, through the art activity, to realize and experience the differences not only regarding techniques and tastes, but also in the messages contained in each piece.

EVALUATION

In order to evaluate this event performance, surveys were distributed for children (written) and teachers (written and alternatives) in both locations in Japan and also in Manado, Indonesia. Other locations also sent emails with important feedback. In the end, the total of surveys answered per location was: 72 from the Japanese students (main site Hiyoshi), 16 from Brazilians (Gunma, Japan) and 35 from Indonesian students from Manado. Surveys for children contained four questions and were distributed right after the session:

1) *What did you learned most through this event?* (LEARNING)

This question aimed to measure the learning factor of this event and if it was directed linked with the initial propose of promoting science. The results are represented in the Graph 1 below.

Graph 1. Results of question 1 (children’s survey)
Although more than 90% of the answers referred to the eclipse as the main learned lesson of this event—as expected in the promote science goal—, 32% of the students included the cultural exchange factor as the main lesson.

2) **What was the most remarkable impression on today’s activity?** (IMPRESSIONS)

To know what was the impact of this event on the participants, they were asked what were their most impressive moment, expecting to understand the difference between interests in science and cultural exchange among those students. Results were concentrated on the eclipse, in special on the *diamond ring* and *corona*, answers for the quiz session held right before the total eclipse observation.

![Graph 2. Results of question 2 (children’s survey)](image)

In the same questions, 20% of the students also featured the opportunity to interact with other students through the transmissions as the most remarkable memory of this event.

3) **Please tell us how was to communicate with students from other countries.**

In this question, students were expected to if they felt comfortable with the interactive sessions held during the event and what were their impressions of being connected with other children abroad. Results were divided in four main categories (differences/similarities, language/communication, drawing and others) as shown in the Graph 3 (next page).

One third of the students raised differences and similarities as their findings when communicating with others, revealing the idea of global and international. 34% of the surveys contained some observation regarding language or the opportunity to have this
multilateral communication experience. Data not very explicit such impressions (*it was good, nice experience*, etc) were included in *Others*.

Graph 3. Results of question 3 (children’s survey)

4) *Please tell us all your impressions or thoughts about participating in this event.* (OTHERS)

This question expected to capture any impressions of pleasure, joy, satisfaction, wish to participate again or have more experiences or any other reflection students could have done after participating in this program.

Most of the surveys showed a very positive feedback regarding the opportunity to interaction and exchange. Among the answers, some comments such of a Japanese student: “I want to take advantage of the power of a computer to be able to communicate more with people around the world. Then, I want to promote the Japanese culture and also deepen the relations with people around the globe.”

A Brazilian boy gave the following answer: “I want to participate again in this kinds of activity. I want my relatives to have the same opportunity I had to see the eclipse with other people from other countries.”

**SYNTACTIC ANALYSIS** - In order to make a deeper reading of the evaluation material, all data collected from 72 surveys of Japanese students were compelled by parsing (syntactic analysis). The results were divided in three main categories: substantives, adjectives and verbs.
First, attention was paid to substantives used within answers. Words such as *eclipse*, *diamond ring* and *total solar eclipse* appeared several times in the first (learning) and second (impression) questions. This result demonstrates that participants had an ample interest or concern about the astronomical phenomenon during this activity. Also, the numerous count of the substantives *country*, *world* and *exchange* shows that the impression of global and the exchange experience were remarkable in their opinion.

Regarding verbs, it could be found a high number of verbs in the past tense such as *saw/watched, thought* and *did*. *Saw/watched* and *did* represent actions or reactions done and can be understood like an experience they had. In the other hand, *thought* can be understood as a reflection. Considering these results, it can be concluded that this program made them experience and reflect about the activities provided.

Adjectives are linked directly to impressions, opinions and emotions. The large use of *good*—the word most found in Japanese students surveys—*great, really/Truly* expresses that this event was deeply impressive for them. *Various and different* also appeared several times and may express the moment the students realized similarities and differences between them and children from other countries.

After reading all surveys, it could be found a sprout concerning about the world, respect for the nature and emotion of the sharing experiences. These answers reflect children’s expectation about exchange with the world, wish of participation in international collaborative relations and an opportunity to think about their own future. One Japanese student gave his testimony: “Participating in this special lecture, I could interact with people in the world, we could see the total solar eclipse together and it was very exciting. I want to become a scientist in the future.”

This feedback is bigger than expected and makes the significance of this experiment more precious. Finally, this result indicates all potential and influences this kind of program utilizing multilateral communication can have on children’s formation.
CONCLUSION

Although there are lots of lessons learned, improvements to be done and possibilities to be exploited, surveys with children and feedback from teachers and other stockholders show that this activity was able to achieve the initial goal of promoting science and have the participants feeling global.

Universities welcome the development of more collaborative programs to young students and children. Since the beginning, they supported the event and gave a very positive feedback regarding the contents and the management. Introducing new programs for different targets is a chance to add new values to the already existent infrastructure.

This experiment confirmed the most important thing: children can feel comfortable and motivated multicultural exchange. They enjoyed watching the eclipse together and the interaction with children from different places. They are ready and curious to have global experiences and we do believe they were inspired by this opportunity.

REFERENCES
AUTHORS

Marcos Sadao Maekawa (marcos@kmd.keio.ac.jp)
Born in 1973, in São Paulo, Brazil. Graduated in Architecture and Urbanism at University of São Paulo (USP) and moved to Tokyo to work as graphic and editorial designer. Now, he is attending the master program of Media Design at Keio University. Member of the Global Education and Digital Kids projects, his research is on program design for children focused on media communication and cultural exchange.

Takehiro Suzuki
Born in 1969, in Yamanashi, Japan. Graduated in Architecture, Suzuki works for a governmental office and is PhD student of Media Design at Keio University. His research has three key words: social collaboration, digital media and governance.

Wakako Satake
Born in 1982, in Gifu, Japan. Graduated from Faculty of Policy Management, Keio University. Now, she is attending the master program of Media Design at Keio University and is member of the Digital Kids project. She is developing programs of creative and expression empowerment for children.

Prof. Keiko Okawa (keiko@kmd.keio.ac.jp)
Prof. Okawa is member of the Faculty of Graduate School of Media Design of Keio University and director of SOI (School on Internet) Asia Project. Her domains include digital communication and higher education environment in Asia.