Supporting a Children's Workshop with Machine Translation

Mondheera Pituxcoosuvarn
Kyoto University
Kyoto, Japan
mondheera@ai.soc.i.kyoto-u.ac.jp

Toru Ishida
Kyoto University
Kyoto, Japan
ishida@i.kyoto-u.ac.jp

Naomi Yamashita
NTT Communication Science Labs
Kyoto, Japan
naomi@cslab.kecl.ntt.co.jp

Toshiyuki Takasaki
NPO Pangaea
Kyoto, Japan
toshi@pangaean.org

Yumiko Mori
NPO Pangaea
Kyoto, Japan
yumi@pangaean.org

ABSTRACT
Previous studies have investigated the characteristics of machine translation(MT)-mediated communication in lab settings and suggested various ways to improve it [3]. We still lack an understanding of how MT is used in a real-world setting, particularly when people use it in face-to-face situations. In this paper, we report on a field study of a multilingual workshop where children from various language regions use MT to communicate with each other. We investigate how children use various information such as non-verbal cues and drawings to compensate for the mistranslations of MT. For example, children tried to understand the mistranslated messages by reading alternative translations and use web browsers to search for pictures of unknown objects. Such findings provide insights for designing future multilingual support systems.

Author Keywords
children's behavior; multilingual workshop; field study; machine translation.

ACM Classification Keywords
H.5.3. Group and Organization Interface: Computer-Supported Collaborative Work

INTRODUCTION
Every year, an event called Kyoto Intercultural Summer School of Youth (KISSY) 2017 was organized by an NPO whose goal is to make the children develop social bonds across boundaries and motivate them to communicate with children from different countries with different languages Previously, Hida [1] studied KISSY workshop in 2014 and 2015. His work showed that, there exist problems in children communication and collaboration. However, previous work did not cover how the participants solve the problem.

Our research question is '*How the children solve their communication problem when using MT'*, in order to design tools for the better support, especially for the user of low language resource. Our results will allow HCI researchers to better understand user problems and behavior when using MT, and thus create more effective design support systems for multilingual collaboration. Based on the results, we suggest the design of a multilingual tool that improves overall communication.

KYOTO INTERCULTURAL SUMMER SCHOOL FOR YOUTH (KISSY)
Children from different countries gathered together at a university to participate in a workshop and collaborate with each other without any foreign language skill required. The main task for the four-day-workshop was to create a short clay animation using clay figures.

Participants and Staffs
From totally five teams, two teams were observed for this study. Each team is consisted of one adult facilitator called team leader(TL) and seven participants aging from 8 years old to 14 years old. Team Red had a Japanese TL two Korean children, four Japanese children, and one Cambodian child. Team Green had a Japanese TL, three Korean children, three Japanese children, and a Cambodian child. There were also bilingual and trilingual staff who supported the activity.

KISSY tool
KISSY tool is a web application with various functions to support multilingual collaboration especially created for KISSY. One of them is general chat interface where the new message appears and the old messages are pushed away. Another chat interface will give everyone their spaces in boxes. Messages from each participant will appear only in each own box. In this function, it is easily to see the message of all users at a time. Another function of KISSY tool that was used often is *ideaboard*. In *ideaboard*, the TL could pose a question and the children could express their ideas and vote (click) for their favorite ideas. The translation service is provided by the Language Grid [2]

METHOD
An ethnographic study was conducted by observing the participants and staffs at KISSY. Videos were recorded from a far distance to minimize interfere with the activities and encourage the participants to relax and react in a natural manner. Later, we conducted face-to-face and online interviews after the event. For each team, we interviewed two children, TL, and staffs who helped with the translation.

COPING WITH MISTRANSLATION

Figure 1 shows methods the participants and staffs used to cope with the mistranslation.

.

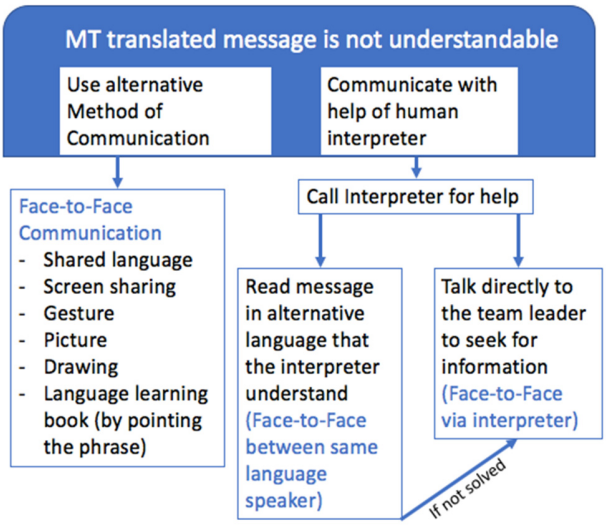

Figure 1 Communication solution when mistranslation occurred

When users could not understand MT messages and the TL and the child(ren) shared a language, even if the language skill was low, they tried to communicate via face-to-face. As displayed in Figure 3, the alternatives included using shared language, use other media including screen, drawing, gesture, picture, language learning books, etc.

When the translated messages were incomprehensible and there was no common language between them, the human interpreter is needed. From the interview, an interpreter reported that he normally used two options. First, the bilingual staff read the messages and tried to understand the message by reading the message translated into other language he knows. Then, if the staff still could not understand the message, he asked the TL directly in their shared language and translated it to the kid.

UNDERSTAND CULTURALLY DEPENDED CONTEXT

The children sometimes seemed to have trouble understanding each other when the messages or words depended on the culture of the originator.

Figure 2 A block was shown to the children

On the first day of the workshop, the staff showed a rectangular block with brown color and asked the children what does it look like. One of the Japanese used KISSY tool to say that it looked like 'Anko' or Japanese style red bean paste. People from a different culture could not understand the comment, because red bean paste in the other countries does not look like a block. Moreover, the Khmer MT translation was 'ស្ករសណ្តែកម៉ាយជប៉ុន' which means 'something made by Japanese'. Khmer speaker could not understand the whole translated phrase.

In this case, further face-to-face communication was needed and a human translator was also needed to help the children to create mutual understanding of the object. Cambodian staff helped the Cambodian child to search for photos of *Anko*. It helped them understand the reference made.

DESIGN IMPLICATION

Image Browser in Multilingual Chatroom

As we reported about culturally dependent context, the participants tried to search for images. Adding an image browser to the tool could save time and effort. It would encourage the users to use more photos or figures when expressing their ideas. This design implication can also help with expressing culturally dependent context that cannot be explained easily by words such as tourist sites, foods, etc.

Showing Translated Result in Known Foreign Language in Parallel

During the workshop, non-native English speaker staff sometimes helped the children by reading messages in English and translated to the children. Instead of using their own language with low quality translated message, reading their second language with high translation quality could benefit the user. Showing both results to the user could increase the chance of understanding messages that were translated incorrectly in their first language.

CONCLUSION

During the workshop, they faced different kind of problems due to and related to the use of MT. The children and staff chose alternative methods of communication when they did not understand machine translated message. The alternative communication channels included using shared language, screen sharing, drawing, gesture, picture, language learning book, etc. When problems arose due to cultural differences or culturally dependent words, they turned to an interpreter for help and used web browsers to search for related photos for better understanding or to confirm the understanding of the others.

REFERENCES

1. Shohei Hida. 2016. Supporting Multi-Language Communication in Children's Workshop. Master's thesis. Kyoto University, Kyoto, Japan.
2. Toru Ishida. 2006. Language grid: An infrastructure for intercultural collaboration. In *International Symposium on Applications and the Internet 2006,* IEEE, 96-100.
3. Naomi Yamashita and Toru Ishida. 2006. Effects of machine translation on collaborative work. In *Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work*, ACM Press, New York, NY, 515-524