

A case study of bringing online field trip closer to reality - how to deliver the online excursion with on-site live broadcasting-

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1. Introduction

Due to the COVID-19 infection control measures, opportunities for "a real" field training and trips are decreasing. On the other hand, there are more chances to conduct online tours. Originally, classroom-to-classroom teleclasses and exchange classes using videoconferencing systems were conducted in the late 1980s (e.g., Shimizu, 1986; Kawamura, 1993). In the 2000s, the use of high-speed Internet connections led to an increase in the introduction of remote classes, and there have been cases of classroom-to-field connections (e.g., Soma et al., 2000; Kawamura et al., 2011).

Since 2010, the use of smartphones and satellite phones has contributed to the diversity of connectivity. However, these are online applications as part of a class, and there are probably no examples of "field trip" around research and learning targets. Hayakawa et al. (2015 JpGU abstract) are exploring the construction of online pilgrimage contents based on actual pilgrimages and maps on the Internet. However, since users use these contents on demand (at different times) after they are made public, there is no direct interaction between guides and participants.

After 2020, there are several projects called online field trip, such as a connecting with several museums ("Gakujiyutu Yaei 2020". <https://amane-project.jp/post-1111/>). Among them, the group "Geography Plaza for Everyone!" (<https://geo-plaza.hatenablog.com/>) is organizing an online tour of the city center based on Google Street View as a tour in the field of geography. This tour using Zoom is close to the original tour where the guide and participants communicate with each other.

In addition, the Izu Peninsula Geopark is providing a real-time tour guide via Zoom from before the outcrop as part of the "2nd Earth Science Week Japan in Shizuoka" (<https://www.earthsciweekjp.org/>).

The author conducted an online tour connecting participants with outdoor landforms and outcrops as part of a project sponsored by a high school geology club and the Japanese Geology Olympiad. The preparation for this project was done by a trials and errors, without knowing the precedents mentioned above. However, it was easy to implement with only one or a few people on the instructor side, and we obtained some knowledge that will be useful in the future for online field trips and field observation for school education and lifelong education.

2. Findings

The following points were clarified by the online excursion with on-site live broadcasting.

The number of people on the sending side: It was possible for one person to guide the participants from the field. However, it is very important to have a facilitator who can act as an intermediary between the participants in case of communication breakdowns and to encourage questions from the participants.

Whiteboards: In a normal tour, whiteboards are often used to explain terms and present overviews as a supplement to the handouts. On the other hand, in the online tour, it was possible to replace the whiteboard by writing on the tablet screen using a stylus pen. In particular, when explaining outcrop sketches, it was possible to overlay lines and text on the outcrop photos, and then erase only the photos. This is an innovation that could not be done with a whiteboard.

Fixing a smartphone on a camera stabilizer (gimbal): Fixing a smartphone on a gimbal absorbs large vibrations and prevents rapid rotation (panning) of the camera. This is useful when giving explanations while walking. It was very effective when moving by bicycle. However, when transmitting from in front of an outcrop, I often shoot with a smartphone or tablet in hand, and heavy gimbal makes my hands tired.

Microphone: Since we were participating in Zoom in the open air, the use of a microphone and earphones was essential to prevent noise. In order to avoid connection problems, we used wired microphones and earphones fixed to our heads. In addition, we used a microphone sponge as a windbreak.

Cell phone lines: Mobile phone lines were good at all sites during this "online excursion with on-site live broadcasting ". However, this is not always the case at outcrops and field trips around the country. It is necessary to confirm this in the preliminary inspection before implementation.

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