

Happy Geoscience Edu: A new geoscience education system in the time of COVID-19

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Abstract

The COVID-19 pandemic weakened many education systems worldwide. As a geoscience education center, the International School for Geoscience Resources (IS-Geo) of the Korea Institute of Geoscience and Mineral Resources (KIGAM) also faced difficulties in educating the public during the pandemic. To overcome the difficulties of a face-to-face education system, IS-Geo created a new education system brand named “Happy Geoscience Edu”, which contains various home-training kits, special online courses, and small-group field training courses. Happy Geoscience Edu consists of four different courses: Happy Geoscience Box, Happy Geoscience Class, Happy Geoscience Talk, and Happy Geoscience Trip. In the ‘Happy Geoscience Box’ course, IS-Geo sends geoscience boxes to families with children. The box contains various geoscience experiment kits together with written instructions and scientific explanations. With this Happy Geoscience Box, parents can guide their children to run the experiments at home. ‘Happy Geoscience Class’ is an online education course mainly for primary to high school students. In classrooms, the students can learn geoscience experiment on a chosen topic through online lectures and follow the instructions. ‘Happy Geoscience Talk’ is an interactive event between KIGAM and the general public. Anyone can send their questions, within the suggested topic, to IS-Geo and then the experts from KIGAM will answer (talk) their questions via YouTube. All ‘talks’ are opened to the public since it aims to increase the public’s attention to geoscience. ‘Happy Geoscience Trip’ is a small-group field training course on UNESCO Geoparks in Korea. It aims to educate local commentators and the public about the detailed geology of the Geoparks. Happy Geoscience Edu has already received positive feedbacks in Korea. We hope this can inspire the education systems in other CCOP member countries.

Keywords: coronavirus, education, E-learning, Geoscience, online education, virtual learning

1. Introduction

Coronavirus (COVID-19) pandemic has negatively affected education systems worldwide. As a geoscience education center, International School for Geoscience Resources (IS-Geo) has also faced difficulties in continuing the traditional face-to-face courses. Many institutions switched to online and virtual teaching, to narrow the education gaps in such pandemic (Ali, 2020; Daniel, 2020; Liguori & Winkler, 2020). Here we introduce a new education system “Happy Geoscience Edu” to overcome the difficulty in our education caused by the pandemic.

2. International School for Geoscience Resources (IS-Geo)

International School for Geoscience Resources (IS-Geo), a geoscience education center of Korea Institute of Geoscience and Mineral Resources (KIGAM), was established in 2010 to spread the accumulated researches achieved by KIGAM. From 2010 to 2019, IS-Geo educated over ten thousand trainees worldwide. **Fig.1** summarizes the standard courses organized by IS-Geo. The Globalization Course is structured for international geoscience experts to learn the newest research topics in their fields. In Future Course, we teach students geoscience knowledge outside textbooks to

increase their interest in geoscience. Finally, the Communication Course is organized to raise public awareness of geoscience issues. These courses are based on face-to-face learning

systems and, thus, due to the COVID-19 pandemic, it was challenging to organize IS-Geo's standard education programs.

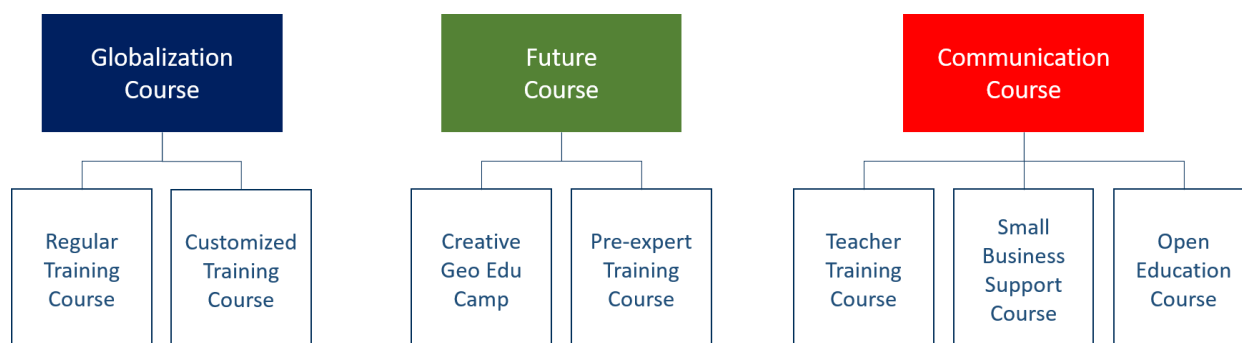


Fig. 1: Standard education programs of IS-Geo. The programs are divided into three courses depending on the education target. All courses involve traditional face-to-face learning systems.

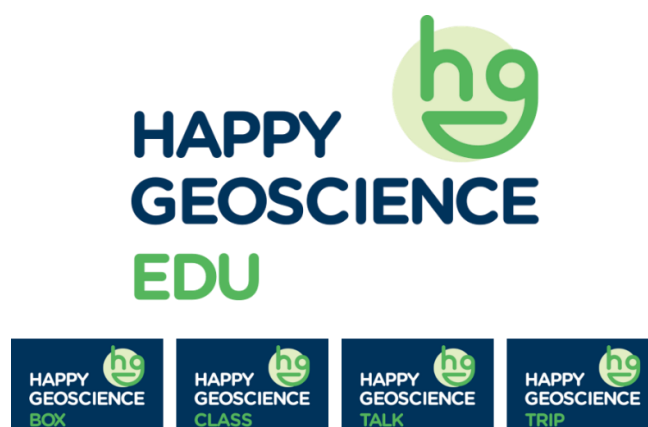


Fig. 2: Logo of the Happy Geoscience Edu.

3. Happy Geoscience Edu (HGE)

Happy Geoscience Edu (HGE) aims to overcome the education disruptions during the COVID-19 pandemic period. Unlike the traditional face-to-face education system, the HGE uses both online and offline materials to avoid direct contact between the instructor and the trainees. There are four different courses in HGE: Happy Geoscience Box (HG-Box), Happy Geoscience Class (HG-Class), Happy Geoscience Talk (HG-Talk), and Happy Geoscience Trip (HG-Trip). As summarized in **Table 1**, each HGE course has different education targets and goals.

HG-Box was organized in April 2020, just after the first COVID-19 outbreak in Korea. In HG-Box course, IS-Geo sends geoscience boxes to families with children staying at home due to the closure of schools. This box contains various geoscience experiment kits (more than nine random kits) such as earthquake detectors, fossil exploration experiments, etc. Written instructions and scientific explanations are also included in the box so the parents can guide their children to run the experiments at home. In 2020, 500 families participated in HG-Box and many participants left positive feedbacks on various social network sites.

HG-Class is an online education course for primary, middle and high school students. This course aims to increase student's interest in geoscience and teach them knowledge outside textbooks. The students can learn geoscience experiment on a chosen topic through online lectures and follow the instructions in classrooms. Teachers can guide their students based on the instruction form sent to them separately. Last year, over one thousand students from 16 schools participated in HG-Class.

HG-Talk is an interaction event between KIGAM and the general public. Anyone can send their questions, within the suggested topic, to IS-Geo and then the experts from KIGAM will answer the questions via YouTube. All 'talks' are opened to the public since the course aims to increase the public's attention to geoscience. In 2020, IS-Geo covered six different geoscience topics: paleontology, sedimentary rocks, gemstones

(gem minerals), radon, landslides, and climate change. HG-Talk is available on KIGAM and IS-Geo YouTube Channel.

HG-Trip is a small group field training course on UNESCO Geoparks in Korea. It aims to educate Geopark commentators and the local people about the detailed geology of the Geoparks. HG-Trip is organized into two parts; an online theory course and an offline field course. First, the instructor, a professional geologist, explains the background geology of the Geopark through online lectures. Then, the participants are invited to the Geoparks for a field trip with the instructor. Unlike other HGE courses, the HG-trip could not avoid face-to-face meetings due to the field trip. Therefore, all participants should wear masks during the whole fieldwork. Last year we organized three HG-Trip courses, twice in Hantangang River Geopark, and once in Jeju Geopark. Approximately thirty local commentators participated in each course

Table 1: Summary of the Happy Geoscience Edu courses.

	HG-Box	HG-Class	HG-Talk	HG-Trip
Target	Families with children	Students	General public	Geopark commentators
Aim	Distribute home-geoscience kits	Encourage students to study geoscience	Raise public attention to geoscience	Educate Geopark commentators
Online materials	No	Yes	Yes	Yes
Offline materials	Yes	Yes	No	Yes
Instructor	Parents	Online instructor	KIGAM's experts	Professional Geologists
Who can apply?	Parents	Teachers	Anyone	Commentators

4. Conclusions

As a government funded organization, the participation of Happy Geoscience Edu is free of charge. Due to high demand, the participants of the HGE courses are selected on a first-come, first-served basis. Happy Geoscience

Edu has already received positive feedbacks in Korea. IS-Geo will continue to organize education programs to increase geoscience awareness. We hope our work can inspire the education systems in other CCOP member countries.



Fig. 3: Image of Happy Geoscience Edu courses: A) HG-Box, B) HG-Class, C) HG-Talk and D) HG-Trip.

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