

# **A Study on the Difficulty Level of the Geological Terminologies in the Explanation Boards in Zhangjiajie Global Geopark in China**

Nuo ZHU<sup>1</sup>, Masanori TAKE<sup>2</sup>

<sup>1</sup> Graduate School of Comprehensive Human Sciences, University of Tsukuba

<sup>2</sup> Faculty of Art and Design, University of Tsukuba

## **ABSTRACT**

UNESCO Global Geoparks are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education and sustainable development. The UNESCO Global Geoparks are obligated to promote awareness of key issues facing society including increasing the knowledge and understanding of the story of the planet as read in the rocks, landscape and ongoing geological processes by educating the local communities and visitors of all ages. In the process of disseminating geological knowledge to the general public, the explanation board in the geoparks plays a very important role. However, the content of the explanation board often contains many geological terminologies which are too difficult for the general tourists and the local people to understand. The difficulty level of the explanation boards which provide geological knowledge to the general public has a great influence on the attractiveness of the signboards and also on the effectiveness of the knowledge dissemination. Therefore, in order to figure out the issue that the contents of signboards might be too difficult for the general public based on the common geological knowledge level of Chinese people, the purpose of this study is to clarify the gap between the contents of the signboards in Zhangjiajie Global Geopark and the geological knowledge level of the general public. This study attempts to make a comparative analysis between the geological terminologies appeared in the content of explanation boards in Zhangjiajie Global Geopark and the terminologies in the compulsory geological teaching materials of high school and middle school which is the most prevalent way for most people to get the geological knowledge in China.

## **1. INTRODUCTION**

Signboard is required to be set up in every global geoparks and it has many different kinds such as direction board, warning board, explanation board and etc. Among all kinds of the signboards, the explanation board plays a very important role in the process of disseminating geological knowledge to the general public. Besides the interpretation from the tourist guides, explanation board might be the most direct and common way for the tourists to learn about the importance and value of the geological heritage in the area and also for enhancing the awareness of the geological resources conservation. It is the obligation of geoparks to disseminate the earth science to the general public. However, too many geological terminologies in the content of signboards will cause the sense of alienation to the general public which is almost consisted of general tourists, children and local people. The experts and scholars in the field of geological only account a very small part among the visitors of geoparks. Therefore, only focusing on the accuracy of contents and quantity of the signboards is not enough. Regardless of the geological knowledge level of the visitors of geopark will cause the signboards lose its original function and deviate from the beginning idea of the producer.

Zhangjiajie Global Geopark is located in the Zhangjiajie city, Hunan province in China. It is well-known for its distinctive landscape – the karst terrain, and also for the beautiful scenery with storrential streams and dense forests. As a famous tourist attraction, Zhangjiajie Global Geopark attracts about 2 million tourists all around the world per year. In 1982, Zhangjiajie National Forest Park was listed as the first National Forest Park in China by Ministry of Forestry and it was officially recognized as a UNESCO World Heritage Site in 1992. It was then approved as Zhangjiajie Sandstone Peak Forest National Geopark in 2001 and then listed as a UNESCO Global Geopark in 2004. In 2007, it was listed as AAAAA Scenic Area by China National Tourism Administration. However, in 2013, Zhangjiajie global geopark was given a “yellow card” warning by UNESCO. Among the reasons given by UNESCO, Zhangjiajie was criticized for “inadequately disseminating knowledge of earth sciences to the general public”. As one of the main methods of imparting the geological knowledge to the general public, the explanation boards in Zhangjiajie Global Geopark were once improved after 2013. Nevertheless, problem like the content of the explanation signboards is too difficult is still being pointed out in recent years. The researches about the signboards in geoparks are very few in China, in order to improve the present signboards in Zhangjiajie Global Geopark and better disseminate the geological value and knowledge to the general public, this study attempts to figure out the difficulty level of the explanation boards according to the geological knowledge level of the general public.

## 2. METHOD

This study attempts to make a comparative analysis between the geological terminologies in the content of explanation boards and in the compulsory geological teaching materials of high school and middle school in China.

### 2.1 Sample Preparation

The Zhangjiajie Global Geopark is located in Zhangjiajie City that belongs to Wuling Range in northwest of Hunan Province. It consists of six main scenic areas which are Yuanjiajie Scenic Area, Tianzi Mountain Scenic Area, Ten-mile Natural Gallery, the Four Gates around the Brooks, Golden Whip Stream Scenic Area and Huangshi Village. It covers 397 square kilometers in which the core scenic area is about 264 square kilometers. By now, two times of field surveys were implemented in September 2017 and June 2018. From the field survey, the picture of 129 explanation boards and the GPS data of each board were recorded. Besides the 24 explanation boards which are mainly introduce the culture and tradition of Zhangjiajie, the other 105 boards all contain geological knowledge. The research object is the whole 105 explanation boards with geological knowledge. According to the content of the signboards, all of the boards were sorted into four categories which are signboards for whole scenic area, signboards for single tourist spots, signboards for geological knowledge and other signboards. The distribution of each kind of signboards in the scenic areas is as follows:

*Table 1: The distribution of explanation boards in the scenic areas*

Name of the scenic area	Signboards for whole scenic area	Signboards for single tourist spots	Signboards for geological knowledge	Other signboards	Total number
Yuanjiajie Scenic Area	4	5	14	0	23
Tianzi Mountain Scenic Area	2	2	6	0	10
Ten-mile Natural Gallery	3	1	0	0	4
The Four Gates around the Brooks	5	2	18	0	25
Golden Whip Stream Scenic Area	4	18	14	0	36
Huangshi Village	1	2	4	0	7
Total number	19	30	56	0	105

From the data it shows that the Golden Whip Stream Scenic Area has the most explanation boards which contain geological knowledge. And the number of signboards for geological knowledge is the most in all kinds of the explanation boards.

## 2.2 Experimental Procedure

After noted down all of the contents of every explanation boards, the geological terminologies will be extracted from the whole content and then make a comparative analysis with the compulsory geological teaching materials of high school and middle school. In China, geological lesson starts from middle school and ends at high school as a required course. It is the most prevalent way for most Chinese people to get the geological knowledge. The following is an example of the list of the geological terminologies appeared in No.009 explanation board.

*Table 2. List of the geological terminologies in No.009 explanation board*

Geological terminologies	High School 1	High School 2	High School 3	Middle School 1	Middle School 2	Middle School 3
<b>Bedding(层理)</b>						
Sedimentary rock (沉积岩)	P72					
<b>Stratification plane (层面)</b>						
Rock strata(岩层)	P73					
<b>Particle size (粒度)</b>						
Cement(胶结物)						
Section(剖面)	P77					
<b>Revolutionary change(突变)</b>						
<b>Gradual change (渐变)</b>						
<b>Stratification (成层性)</b>						
Rocks(岩石)	P22			P33		

From the table 2, it shows that among the 11 terminologies appeared in the No.009 explanation board, only 4 words could be found in the teaching materials of high school and only one word could be found in the teaching materials of middle school.

### **3. RESULTS AND DISCUSSION**

From the research of present stage, the hypothetical results of this study is that the geological terminologies in the content of explanation boards in Zhangjiajie Global Geopark is too difficult for the general public according to their geological knowledge levels. In order to let most of the visitors and local people have a better understanding of the geological knowledge in Zhangjiajie Global Geopark, the difficulty level of the geological terminologies in signboards should adapt to the geological knowledge level of general public. In the process of designing and making the signboards, focusing on both academic aspect and acceptance of public is very necessary and also very difficult. The future research direction might be how to balance the both two sides.

### **4. CONCLUSIONS**

This study attempts to compare the geological terminologies in the content of signboards with the compulsory geological teaching materials of high school and middle school. The research object is total 105 explanation boards in the Zhangjiajie Global Geopark. From the research of present stage, the hypothetical results of this study is that the geological terminologies in the content of explanation boards in Zhangjiajie Global Geopark is too difficult for the general public according to their geological knowledge levels. In order to solve this problem, the difficulty level of the geological terminologies in explanation boards is supposed to adapt to the geological knowledge level of the general public.

### **ACKNOWLEDGEMENTS**

I would like to express my deepest appreciation to all those who provided me the possibility to complete this report. A special gratitude I give to Professor Masanori TAKE from Faculty of Art and Design, University of Tsukuba, whose contribution in stimulating suggestions and encouragement helped me a lot in writing this report.

### **REFERENCES**

- Marekazu OHNO, 2014, What should we describe to explanation panels in a Geopark?:Actual examples of transmitting of volcanological information for visitors, Programme and abstracts the Volcanological Society of Japan, 9, 5-7
- Wataru Hirose, 2016, Process of creating of explanation boards in Japanese Geopark, Programme and abstracts the Volcanological Society of Japan, 48, 13-17
- Zhangjiajie UNESCO Global Geopark:<http://www.zhangjiajieglobalgeopark.org.cn/en/>

*Address: Nuo ZHU, Graduate School of Comprehensive Human Sciences, University of Tsukuba  
1-1-1 Tennodai,, Tsukuba, Ibaraki, 305-8574, JAPAN  
E-mails: zhunuoliuxue@163.com*