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*Original Paper*

# Bilingual Science Popularization for School-age Children Based on Community Science Museum

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***Abstract***

*This study aims to explore the effective ways for English major volunteers to carry out bilingual science popularization activities based on community science museum. Firstly, the content and process of the activity are elaborated, the existing problems are pointed out, and relevant suggestions are given. It is found that bilingual science popularization based on the community science museum not only helps to enhance the scientific knowledge and bilingual learning of community youth, but also promote the development of community culture.*

***Keywords***

*Community science and technology museum, Bilingual popular science, Volunteer service, English major college students*

## 1. Preface

Community science and technology museum is a place established in the community with the main function of popular science. It can create a good scientific and cultural atmosphere for the community. Through various displays and interactive experience activities in the science and technology museum, primary school students in the community have more opportunities to understand scientific knowledge, explore the mysteries of science, and stimulate their interest in learning.

Community bilingual popular science can improve the bilingual comprehension and expression ability of primary school students. They gain more scientific knowledge and information, which lays a solid scientific foundation for them, and their cross-cultural communication and expression abilities are also cultivated. At the same time, it is more helpful to improve the ability of primary school students to tell contemporary Chinese scientific stories in English. As for English majors, using their professional knowledge to serve the society can not only enhance the sense of social responsibility of college students in the new era, but also exercise the professional skills and communication and expression

abilities of college students, and promote their all-round development. This study aims to explore the effective ways for English major volunteers to carry out Chinese-English bilingual popular science for primary school students in the local community, and attempt to discuss the activity from the aspects of introduction, process, existing problems and related suggestions.

## 2. Introduction

This activity is based on the Nanhu Aerospace Science and Technology Museum in Wuchang District, which is an artificial intelligence-themed community museum, integrating aerospace popular science, simulation experience, and education through entertainment. The museum is equipped with 8 sections and 15 exhibits, such as aviation aircraft models, intelligent interactive robots, and aerospace knowledge popular science walls, aerospace popular science knowledge question and answer areas, aviation driving experience, VR interstellar exploration, VR playing with the space station, Ma Liang's magical brush, and so on. The main community where the activity is carried out is Boan Community, located in the former site of Nanhu Airport, with a strong airport culture atmosphere. The combination of the resources of the science and technology museum and the community culture lays a solid foundation for carrying out bilingual popular science courses on aerospace knowledge.

College student volunteers are from Hubei University of Technology. With primary school students in the community as the teaching object, they combine foreign language professional resources with aerospace knowledge, and carry out a series of aerospace bilingual science courses with the theme of "Exploring aerospace knowledge and co-writing bilingual science popularization chapters". The activity not only realizes the linkage between colleges and communities, strengthens the construction of community culture as well. It also helps primary school students in the community to improve their foreign language proficiency and enhance their scientific knowledge reserves in an entertaining way.

## 3. Process

### *3.1 Volunteer Recruitment and Training*

According to the requirements of the bilingual popular science courses, volunteers are carefully selected. Volunteers are required to have a strong English proficiency and good communication skills, willing to actively engage in volunteer service work, and full of enthusiasm for volunteer service. After the selection of volunteers, training is conducted on relevant popular science knowledge, English teaching skills and communication etc. Volunteers are organized to make courseware for popular science courses, and a trial lecture is necessary before the formal teaching.

### *3.2 Research and Consultation*

Relying on the community aerospace science and technology museum, before the activity, a questionnaire survey is conducted on primary school students in the community to understand their mastery of aerospace knowledge and their interest in bilingual popular science activities. Since the objects of the bilingual popular science activities are primary school students in the community, timely

communication is carried out with community staff to clarify the time arrangement of the bilingual popular science course.

*3.3 Content Design*

The community, where the activity is carried out, is Baoan Garden, the location of the former Nanhu Airport, and the former airport tower is still well preserved. We have launched a series of activities based on the history of the community airport.

3.3.1 Activity One: I Love My Home - "The Past and Present of Nanhu Airport and Tianhe Airport"

Primary school students in the community are organized to visit the former site of the airport command center, watch the exhibition wall of the science and technology museum, and learn about the history of Nanhu Airport and the origin of Tianhe Airport.

Students are also taught to acquire relevant airport English vocabulary and learn how to tell the history of Nanhu Airport in English. They get to know the development and changes of Wuhan Airport, feel the vigorous process of Wuhan's urban development and learn to tell the history of the community in both languages, and cultivate the family and country feelings of loving Nanhu, loving Wuhan, and loving the motherland.

3.3.2 Activity Two: Bilingual Small Lecture on Aerospace Knowledge

An English classroom is organized on aerospace knowledge to teach English vocabulary related to aerospace knowledge and formal expressions, which leads the children to simulate situational dialogues, and divide them into groups to present and share on aerospace themes, such as the spirit of aerospace, the most in aerospace, etc., to guide students to actively understand aerospace knowledge.

*3.4 Demonstration of Teaching Process*

The following will take the course of "Exploring Shenzhou XVII Spaceship, Bilingual Popular Science Shows Style" as an example to show the 40-minute bilingual popular science teaching process for primary and secondary school students in the community. This course aims to stimulate the exploration desire of primary school students in the community for the Shenzhou XVII spaceship and improve their bilingual communication and expression ability through bilingual popular science.

3.4.1 Course Introduction (5min)

(1) Play the video of the launch of the Shenzhou XVII spaceship to arise the teaching theme. (2min)

(2) Ask students what they know about the Shenzhou XVII spaceship. (3min)

3.4.2 Knowledge Explanation (10min)

(1) Explain the basic information of the Shenzhou XVII spaceship. (1min)

(2) Introduce key vocabulary, such as: Shenzhou XVII spacecraft, Astronaut, cabin, launch, aerospace, structure, etc., and invite students to read aloud. (5min)

(3) Combine physical models and pictures, use simple English and supplemented by Chinese translation to introduce the structure and function of the Shenzhou XVII, such as: The structure of the Shenzhou XVII manned spaceship is a three-cabin-three-ship combination configuration, including three cabins of the space station, two manned spaceships and one cargo spaceship. During the

explanation process, questions are appropriately asked about the content just mentioned, asking students whether they remember the relevant bilingual expressions just mentioned, such as how to say the space station in English, how to express the cargo spaceship in English, etc., to deepen students' memory. (8min)

3.4.3 Communication and Interaction (15min)

(1) Let students discuss the scientific knowledge and related English expressions learned in this lesson in groups. (7min)

(2) Invite students to share the scientific knowledge learned in the process of bilingual popular science in groups. (5min)

(3) Conduct a question-and-answer activity to lead students to review the classroom knowledge, such as how to express the Shenzhou XVII in English, etc. (3min)

3.4.4 Classroom Practice (5min)

(1) Follow the tutor to read the words just learned. (2min)

(2) Do a matching exercise for the words learned in this lesson. (3min)

## 4. Problems

### *4.1 Insufficient Reserve of Aerospace Knowledge Among*

When English majors volunteers conduct bilingual popular science, although their English are good, they do not have in-depth understanding of popular scientific knowledge. Taking the explanation of aerospace knowledge in the science and technology museum as an example, volunteers' popular science knowledge is relatively simple, but some primary school students have a profound understanding of aerospace knowledge and will raise some specific scientific questions, such as how is the space station built? Or ask the volunteers how to translate "parking", "transferring", and "orbiting around", and the volunteers will feel that they do not have enough understanding of complex scientific concepts, resulting in the lack of accurate and clear express in English.

### *4.2 Lack of Practical Teaching Experience Volunteers*

Most students only learn knowledge in the classroom and have a lack of experience in teaching, especially popular science. That's why they are not good at communicating with primary school students in the classroom and establishing a good teacher-student relationship, and at a loss for unexpected situations in the classroom. For example, when volunteers ask primary school students to discuss in groups, some primary school students may discuss something unrelated to the contents or make noise, thereby affecting the classroom order, while the volunteers may not be able to communicate with the students to keep the classroom in good order.

## 5. Suggestions

### *5.1 Innovating the Form of Bilingual Popular Science*

It is crucial to innovate activity forms. For example, it is helpful to make popular science videos to enhance the interest of primary school students through vivid pictures and explanations. It is necessary to keep up with the hotspots in the field of science and technology to help primary school students obtain the latest scientific information. For instance, recently the Shenzhou XVII spacecraft returned successfully. Based on this news, students can be organized together to watch relevant news and carry out popular science, which can not only enhance the interest of primary school students, but also achieve a better popular science effect.

### *5.2 Strengthening the Contacts with the Community Science and Technology Museum*

The development of community bilingual popular science activities cannot be separated from the support and help provided by the community science and technology museum. Therefore, it is necessary to strengthen the connection with the community science and technology museum, obtain strong support from the science and technology museum, integrate resources, and create a better environment for popular science activities to attract more primary and secondary school students to participate.

### *5.3 Organizing Volunteers for Mutual Study*

For the existing problems in the process of popular science, volunteers can be organized to study aerospace knowledge together, such as each volunteer being responsible for a section, making PPT for detailed explanation, and conducting discussions after the explanation to gain an in-depth understanding of aerospace knowledge. Volunteers can organize simulated teaching, invite teachers to observe and guide, and communicate with each other to summarize experience and accumulate experience for bilingual popular science.

## 6. Conclusion

Based on the successful development of bilingual popular science activities for primary a school students in the community science and technology museum, the theme of popular science is both interesting and practical, which is conducive to cultivating the ability of community primary school students to tell Chinese stories and communicate internationally in bilingual. However, there are still problems such as insufficient knowledge of aerospace and lack of practical teaching experience by volunteers in bilingual popular science activities. In the future, it is necessary to innovate the form of popular science, strengthen the connection with the community science and technology museum, and organize volunteers to study together to better carry out bilingual popular science activities.

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