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A Practical Study on Teaching of Community Hosted Bilingual Popular Science Course

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Abstract

The community hosted projects play an important part in community service. Among its various offerings, the community hosted popular science course has gained great love by both students and parents due to its interest and practicality. Drawing from practical experience, this study explores the teaching of community hosted bilingual popular science course. Based on the characteristics of the service objects and the requirements of hosted courses, it analyzes feasible teaching methods in combination with practical samples, so as to increase students' scientific knowledge reserve, improve their English proficiency, hone their skills in telling Chinese stories in English, and make community hosted courses more interesting and meaningful.

Keywords

Community hosted, Popular science course, Bilingual, Teaching

1. Introduction

Community hosted courses are public service programs designed to assist working families in supervising children during summer and winter vacations, ensuring the safety of adolescents, and guiding school-aged children to effectively utilize their holiday time. These programs not only showcase the governance capacity and convenience of community development but also greatly facilitate the work arrangements of parents, promoting a safe and orderly learning environment for adolescents during school breaks. Among the various community hosted course, popular science courses are highly favored by both students and parents. Not only are these courses practical and interesting, but they also help students broaden their knowledge and enhance cultural confidence. The integration of English teaching into community hosted popular science course enriches the content and expands the scope of knowledge. Bilingual popular science course, which is both entertaining and practical, facilitates the cultivation of students' interest in learning English, fosters an initial

understanding of technical terminology, enhances cross-cultural communication skills, and develops the ability to narrate Chinese stories in English.

The "Language Guides You, Action Enlightens You" (“语”你童“行”) Bilingual Science Popularization Volunteer Team from Hubei University of Technology, led by university students majoring in English, provides community hosted bilingual popular science course for community adolescents. The volunteer team has conducted over 60 bilingual science popularization courses, covering multiple communities in Wuhan. More than 40 volunteers have participated in these activities, producing dozens of sets of bilingual science popularization PowerPoint, benefiting thousands of adolescents. This study combines practical investigations, teaching experiences, and reflective summaries of the "Language Guides You, Action Enlightens You" Bilingual Science Popularization Volunteer Team to explore the instructional design of community hosted bilingual popular science course.

2. Analysis of Service Object’s Characteristics

The main target demographic for community hosted after-school programs primarily consists of elementary school students in grades one through six, whose parents lack the time to supervise them during winter and summer breaks. This demographic differs significantly from students enrolled in regular school programs, and it is a crucial factor in determining the course design.

2.1 Age distribution of Students

Community hosted after-school programs mainly cater to elementary school students in grades one through six. The age distribution is uneven, with significant variations in comprehension abilities and knowledge reserves among students. Younger students require a slower pace of instruction to ensure understanding and benefit from diverse interactive and engaging presentation styles to maintain attention. In contrast, older students require sufficiently novel content to avoid repetition of school-based knowledge. Therefore, the overall curriculum needs to be diverse in format, fresh and engaging in content, and straightforward in terms of knowledge points. It should not be overly esoteric or have significant comprehension barriers, to prevent students from developing a fear of difficulty. Thus, when designing the pace and difficulty of instruction, priority should be given to considerations for younger students, ensuring that the majority can understand and grasp the course content and actively participate in question-and-answer interactions, thereby fostering a positive classroom learning atmosphere.

2.2 Characteristics of Classroom Order

School-based curricula emphasize the development of student abilities, assessing students' mastery of knowledge through assignments and examinations. In contrast, community hosted after-school programs do not have stringent requirements regarding students' mastery of content. While this reduces students' learning pressure and creates a more relaxed learning atmosphere, it also leads to students perceiving the course content as unimportant and neglecting adherence to classroom order norms. Consequently, maintaining classroom order needs to be considered when designing the curriculum.

This can be achieved through engaging collective interactions and course designs that capture students' attention, encouraging them to focus on listening. Examples include synchronized word reading, reciting poetry, answering questions in a "train" format, role-playing scenes from texts, and presenting lively and interesting video materials.

2.3 Students' English Proficiency

Students in after-school programs come from various elementary schools, with uneven age distributions and significant differences in English proficiency. Some students have not been exposed to English learning and only understand Chinese phonetics, while others have good English foundations, proficient in basic sentence structures, possess a certain vocabulary, and are familiar with some grammar rules. Therefore, when designing question-and-answer tasks, questions of varying difficulty levels can be incorporated to engage students at different proficiency levels. Selecting knowledge points that require no prior English foundation ensures that the vast majority of students can understand, while also aiding students who have already studied these knowledge points in reviewing and enhancing their confidence in learning English.

3. Key Points of Course Design

3.1 Course Themes

The selection of topics for science popularization courses designed for elementary school students should be engaging, covering fundamental scientific knowledge to stimulate children's curiosity and exploration desires. Topics may include scientific knowledge, traditional cultural knowledge, and practical life skills. Course content should be both interesting and practical, enabling students to apply the learned knowledge to their daily lives while broadening their horizons. It should focus on China's historical culture and technological achievements. For example, when presenting space science knowledge, Chinese space history, astronauts, and technological achievements can be highlighted to enhance students' national confidence, cultural identity, and ability to narrate Chinese stories in English.

3.2 Teaching Methods

Community-based after-school programs need to ensure the interestingness of courses. Therefore, a variety of teaching methods and presentation styles should be employed, such as interactive questioning, games, scientific popularization videos, and PowerPoint presentations primarily consisting of images and animations. These methods help maintain students' attention and foster participation in the course, creating a sense of engagement. It should be avoidable to present large blocks of text on PowerPoint slides, as this may lead to student disinterest and lack of concentration.

3.3 Teaching Content

Bilingual science popularization courses should consider students' overall receptiveness. The difficulty level of the curriculum should prioritize compatibility with younger students. Thus, course content should be easy to comprehend, with minimal memorization, rich in interest, and delivered at a

moderate pace. English knowledge should be closely integrated with scientific popularization content, allowing students to learn to tell Chinese stories in English implicitly. The teaching content should have a focus, with some parts emphasized and thoroughly explained in class, while others are introduced for general understanding. This ensures that students can grasp and apply key knowledge effectively while expanding their knowledge in an effortless yet efficient learning process.

English vocabulary involved in the curriculum should be focused and easy to remember and read. Focused vocabulary teaching should revolve around the course theme, with a moderate quantity, focusing on specific topics in each lesson to facilitate absorption and understanding, and to establish systematic memory. Easy-to-remember words should be short, and teachers should provide mnemonic devices and homophonic memory aids. Easy-to-read words should have pronunciation patterns similar to Chinese phonetics, facilitating accurate pronunciation for students. Difficult-to-read words should be avoided or repetitively taught as key points in class.

The grammar knowledge in the curriculum should be of controlled difficulty, understandable and applicable even without prior English foundation, such as "There be" sentence patterns, "be made of" sentence patterns, and sentence patterns describing time and place. Additionally, vocabulary and grammar should be explained in conjunction to enable direct application of learned knowledge by students.

3.4 Review and Consolidation

Bilingual science popularization courses should effectively help students memorize vocabulary and grammar points through various means, utilizing diverse exercise methods and multiple reviews to reinforce memory and mastery levels. For example, picture association memory, homophonic memory, root-word explanations, guessing games, scene rehearsals, and fill-in exercises can be employed. Before each class, review the previously learned content, and at the end of each class, summarize and review the content learned through simple question types such as matching and multiple-choice questions, ensuring a lasting impression of the learned knowledge on students.

4. Analysis and Reflection on Teaching Cases

The "Language Guides You, Action Enlightens You" bilingual science popularization volunteer team from Hubei University of Technology, conducting courses in Wuhan, provides valuable practical experience for bilingual course design, particularly exemplified by the aerospace series. This analysis focuses on the actual course "The Ancient Chinese Dream of Flying" and incorporates lesson plan design, PowerPoint production, teaching reflections, and student feedback to summarize the strengths and design pitfalls in bilingual science popularization courses.

4.1 Syllabus

"The Ancient Chinese Dream of Flying" is a 25-minute course designed for 40 community-based children, aiming to lead them to understand the development of ancient Chinese aerospace technology and enhance their cultural identity and storytelling skills in English. The lesson plan is as follows:

1. Introduction of Theme (3 minutes)

Engage students through interactive questioning to spark interest in the course topic (3 minutes).

2. Narration of Ancient Aerospace Stories and Explanation of Relevant English Expressions (13 minutes)

2.1 Tell myths, ancient stories, and technological inventions related to flying, allowing students to explain actively using prompts and analyzing the exploration spirit therein (8 minutes).

2.2 Explain relevant words and phrases such as aircraft, rockets, Chinese Lunar Exploration Project, etc., in English (5 minutes).

3. Appreciation of Flying-Related Poetry (4 minutes)

Read flying-related poems to appreciate the poetic charm and learn from ancient wisdom (4 minutes).

4. Review and Practice (5 minutes)

Review learned words through repetition and reinforce understanding through activities like picture matching and context fill-in exercises (5 minutes).

4.2 Teaching Effectiveness and Design Highlights

The course design has many commendable aspects, resulting in student engagement, meaningful learning experiences, and positive feedback. This is mainly attributed to several factors:

(1) The course content is interesting, with English knowledge tightly integrated with scientific content and distributed reasonably. By focusing on ancient Chinese myths and technological inventions, the course captivates students' interests and maintains their attention throughout. The moderate distribution of English knowledge points within various intriguing stories prevents student resistance to English learning while making science-related English expressions enjoyable to learn.

(2) The word explanations are interesting and reviewed multiple times, leaving a lasting impression on students. For instance, the word "aircraft" is broken down into roots and the meaning of each word in "Chinese Lunar Exploration Project" is respectively explained. Finally, the integration of memory makes the learning effect remarkable. With simple and interactive explanations, students master the content well and actively participate in end-of-class exercises.

(3) The class features diverse interactive forms, including student storytelling, poetry recitation, and English knowledge quizzes. The lively atmosphere fosters high student engagement, concentration, and solid knowledge mastery.

(4) The PowerPoint presentation is visually appealing, with clear organization, vibrant images, and highlighted text. It not only enhances student interest and attention but also deepens their understanding of ancient stories and inventions, helping with English word association and memory.

(5) The course conveys positive values by integrating traditional Chinese culture with technological development, deepening students' understanding of China's scientific achievements and fostering cultural confidence and national pride.

4.3 Teaching Design Pitfalls and Reflections

While the overall response to the course was positive, there are areas for improvement:

(1) The categories of English words taught are somewhat scattered, covering aerospace tools, aerospace-related verbs, and aerospace spirits, making it challenging for students to form systematic memories. To address this, word selection should focus on one category for in-depth teaching to avoid excessive complexity.

(2) Some parts of the PowerPoint contain lengthy text passages. Considering the students' reading level, it's advisable to minimize large blocks of text and instead highlight key words or phrases to facilitate focused reading.

Optimizing these areas without increasing the course difficulty should lead to better teaching outcomes.

5. Conclusion

Through the summary and reflection on practical teaching experiences, it is evident that well-designed community hosted bilingual science popularization courses are tailored to students' abilities, feature engaging content, and employ diverse teaching methods. These courses not only enhance scientific literacy and English proficiency among community children but also contribute to community development and the dissemination of Chinese culture. It is recommended to promote such bilingual courses, allowing more youth and volunteers to participate in practical and enjoyable after-school programs.

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