

## Education Reform and Practice of Public English Teaching in Higher Vocational Education under STEAM

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**Abstract:** The public English teaching of vocational colleges plays an essential role in both language-tool using and cross-culture communication. Therefore, the author concentrated on the reform in public English teaching to meet the high standard of vocational education. The thesis took a communicating interaction period as an example to combine STEAM into an oral English class. Environmental protection will easily arouse students' interest to participate in the activity. Exactly speaking, the whole class is processed in human-centered design of novel engineering steps. They are namely to empathize, define, ideate, prototype and test. Using the story of *Noah's Ark* to lead in, the author made efforts to explore new way for students to come up with ideas to protect the environment. (1) It's to empathize the feelings of characters in *Noah's Ark*; (2) It's to define the exact problems for characters, such as Noah and animals in the ark; (3) It's to find ideas to solve the problems; (4) It's to draw and build the solution; (5) It's to test the solution is available or not; Finally, it proved students are creative, active, and efficient to brainstorm ideas to help characters in *Noah's Ark*. Meanwhile, students have appreciated the importance of making the earth a green planet.

### 1. Background Policies

The Central Committee of the Communist Party of China and the State Council issued the *China Education Modernization 2035*. The General Office of the CPC Central Committee and the General Office of the State Council issued the *Implementation Plan for Accelerating the Modernization of Education (2018-2022)*. China's education modernization in the 21st century, which is the Chinese version 2.0 for education modernization, needs to fully reflect not only the common education-oriented requirements of global modernization and individuals' modernization, but also the special requirements of China's national modernization and individuals' modernization. The policies gave educators, researchers, and teacher's direction of education reform, which strengthen the understanding of new teaching theories and Internet plus technology.

On January 28, 2019, the State Council issued a document on the implementation plan for vocational education reform, which is known as “*20 items for vocational education*”. It emphasizes vocational education and general education are two different types of education and they are of the equal importance. In Chinese higher education system, English teaching is a basic course of education, colleges and universities attach great importance to English education to a very high level [1]. The public English teaching of vocational colleges plays an essential role in both language-tool using and cross-culture communication. It promotes the value of people, pays attention to the cultivation of comprehensive quality and comprehensive development of people. It has important significance for improving English application quality and ability of students [2]. Therefore, the author concentrated on the reform in public English teaching to meet the high standard of vocational education.

## 2. STEAM Education Concept and the Present Situation of Oral English Class

STEAM education is one of the advanced teaching concepts. The STEAM education concept was first proposed by the US government. Its importance in the United States is no less than that of China's quality education. Many colleges and universities in the United States have corresponding curriculum systems. It can be seen that STEAM education has ushered in opportunities in China and has policy escort. STEAM Education aims to promote an interdisciplinary approach to teaching science, technology, engineering, art and mathematics; to guide students to adapt to constantly updated professional knowledge and rapidly changing social life, and to support students in understanding the world in a disciplined way. It also aims to create a world in the form of comprehensive innovation and cultivate their innovative ability to solve problems.

In traditional oral English class of vocational colleges, students are not so brave and active to communicate with each other's in English language. They prefer to use Chinglish or zip their mouth to be a listener. Something interesting should be introduced to inspire student's English communicating interaction. The author took a communicating interaction period as an example to combine STEAM into the oral English class. Teachers, especially English teachers in local colleges, as special practitioners of helping other people [3, 4]. Environmental protection, the topic of the speaking class, is widely discussed by students, which will easily arouse students' interest to participate in the activity.

## 3. The Practice of STEAM in Communicating Interaction

Exactly speaking, the whole class is processed in human-centered design of novel engineering steps. They are namely to empathize, define, ideate, prototype and test. Using the story of *Noah's Ark Adventure* to lead in, the author made efforts to explore new way for students to come up with ideas to protect the environment. Exactly speaking, the whole class is processed in human-centered design of novel engineering steps. The procedures of the class is included in the five steps. They are namely to empathize, define, ideate, prototype and test.

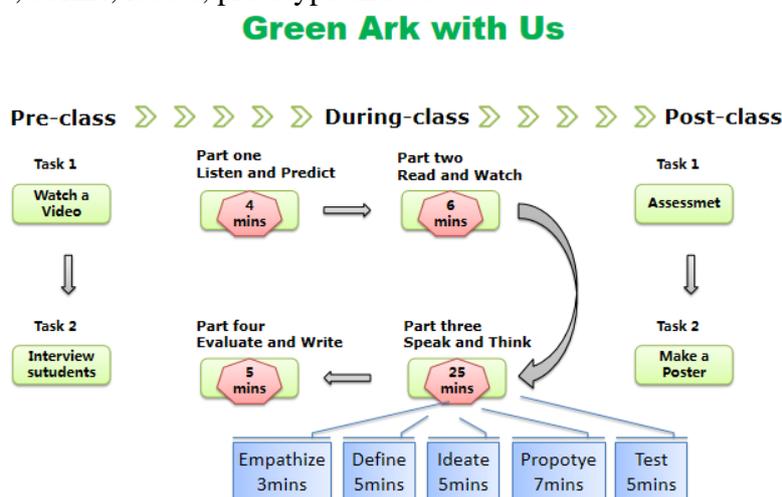


Fig. 1 The design of the oral English class in STEAM education

### 3.1 Pre-class activities.

With the help of on-line learning platform, the author assigned two tasks for students to know the topic. Watch the film *The Wandering Earth* first, and then interview other students in campus.

### 3.2 During-class activities.

A song, *Heal the World*, is used to warm up the class. The theme of the song is like that topic of the class. And then, presentation of assignment is looked to lead in the content. After watching the main video of *Noah's Ark Adventure*, which is a simple but funny picture book story, students are

expected to use human-centered design principles to carry out the five novel-engineering steps. (a)Empathize. In this step, students are to be clear about the plot of the story and to imagine what the characters’ feeling is. Five main characters are included in the story. And the key words of the story are especially helpful for students to get clear of the story. (b)Define. Students are to define the exact problems of the characters, especially the main characters’ problems. (c)Ideate. Students are to be creative and to find the solution for different problems for them. (d)Prototype. Students are to draw out their solution and build products. (e)Test. Students are to check whether their product is available or not and improve it.

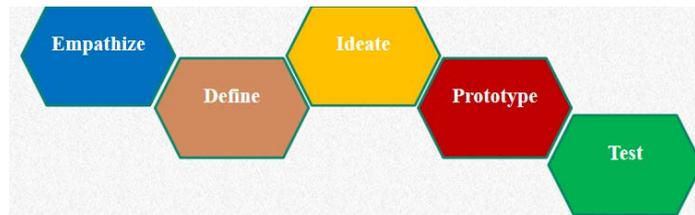


Fig. 2 The novel-engineering

Name of your group	Characters	Problems	Solutions	Design
Microssam	Asah	1. He may feel bored in the city. 2. It is difficult to be with so many animals. 3. He may be short of food and water. 4. The boss of the city is too strict. 5. He and his family may be ill.	1. They can eat out of their eggs and drink purified water. They also can plant their own vegetables. 2. They can make a huge tent. 3. They can bring some medicine. 4. Asah can plant flowers. The boss can be chosen or voted down. 5. Choosing houses with different habits and separate them to live.	
The Star of Fantasy	Children	1. They will be short of water and food. 2. They may be ill in the rain. 3. It is very dangerous for them to forest or collect the water for such a long time. 4. They have nothing about the survival way.	1. The children have the magical key in their bag. The magic will help them out of danger. 2. They can use their magic to find the food and collect the rain for drink. They water. 3. They can get some medicine from the magic key.	
Extraordinary	The dog Flippy and other animals	1. They will be eaten by bigger animals. 2. The dog Flippy can not go outside the park because Nick had had his animals/dogs.	1. For animals who can not take care to avoid the bigger animals. 2. For the dog, he can have the wings to avoid to fight the other animal or he can use a wand to help the dog to fight other the Nick's other.	

Fig. 3 The design of novel-engineering



Fig. 4 The products of solution

### 3.3 Post-class activities.

It's time to assess students' performance in group work, as well as individual tasks.

<i>Assessment form of project research process</i>				
<i>Research Group</i>		<i>Group</i>		
<i>Number</i>	<i>Assessment contents</i>	<i>Points</i>	<i>Main contents</i>	<i>Teacher's assessment</i>
<i>1</i>	Problem analyzing abilities	15	Solve the problem quickly and analyze the detailed problem comprehensively.	
<i>2</i>	Information gathering abilities	15	Obtain information from designated channels according to group planning and collect information related to topics.	
<i>3</i>	Information analyzing abilities	15	Analyze the collected information independently, screened and categorized.	
<i>4</i>	Knowledge application abilities	15	Explain practical problems by combining original knowledge system with newly acquired information	
<i>5</i>	Problem solving abilities	20	Analyze and put forward effective solutions to the problems.	
<i>6</i>	Plan designing abilities	20	Design more than two solutions, one of which was identified as the optimal solution.	

Fig. 5 The assessment of group work

#### 4. Conclusion

The highlight of this lesson is to integrate STEAM teaching concepts into the English classroom, which can make future primary education teachers get familiar with this strategy. And it might be helpful in their future vocational education. Students are filled with curiosity to finish the tasks in class. And English is the only tool they can use to communicate with partners. This class uses a combination of online and offline learning. Highlight key points, break through the difficulties, and change the evaluation method to achieve the purpose of students' learning and enjoyment. Teachers have played a positive and active guiding role, and consciously promoted students to solve problems creatively, inspired them to imagine, practice, and not fear the failure.

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