

Field Maker Training of Traffic Signs English Translation

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Abstract: *Maker education relies upon hands-on, often collaborative, learning experiences as a method for solving authentic problems. The paper is based on a trial experiment that apply maker education in English policing field training of traffic signs translation, participants study the related knowledge and interact through a QQ group, investigate on the scene to spot problem or doubts on English translation, consult online or with traffic policemen, English teachers, professional course teachers to understand the task, analyze the problem, design solutions, apply in practice and revise solutions before submitting the final solutions to be used in policing practice. Outcomes show that interdisciplinary skills are improved and proposals on the unification of traffic signs English translation nationwide are presented.*

Keywords –*Maker training, English for policing, traffic signs, challenging tasks, solutions*

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I. Introduction

Maker education (a term coined by Dale Dougherty in 2013) closely associated with STEM learning, is an approach to problem-based and project-based learning that relies upon hands-on, often collaborative, learning experiences as a method for solving authentic problems. In schools, maker education stresses the importance of learner-driven experience, interdisciplinary learning, peer-to-peer teaching, iteration, and the notion of "failing forward", or the idea that mistake-based learning is crucial to the learning process and eventual success of a project. [1]

In addition to bringing maker education to schools, scholars like Paulo Blikstein of Stanford University and Dennis Krannich of the University Bremen, in Germany, state that, "Digital fabrication and 'making,' and the positive social movement around them, could be an unprecedented opportunity for educators to advance a progressive educational agenda in which project-based, interest-driven, student-centered learning are at the center stage of students' educational experiences." [2] Penketh High School became the first school in the United Kingdom to embed maker education into the UK education system in 2018. [3] The Obama Administration has also strongly supported the growing maker movement as an integral part of STEM education, which it hopes will increase American students' ability to compete globally in the areas of science, engineering, and math. [4]

II. English Policing Field Maker Training

2.1 Significance of English Policing Field Maker Training

The application of IT in maker education was initiated by the Chinese Education Ministry in June 2016 to improve the students' consciousness and competence of innovation. But the current problems lie in the lack of insight knowledge of maker in practice and research as well, especially the inadequate exploration in integrating maker education into curriculum. [5] Nine projects admitted as national college student innovative and corporate training plan projects were all subjects of science in 2016, there are 24 projects belonging to science subjects and only one project of English *The Running and Administration of English Virtual Police Department* guided by the author in the 30 provincial projects in the same year in Liaoning Police Academy. The virtually blank research of innovative and corporate projects of liberal arts makes it necessary for practice and research in liberal arts, such as English.

English Policing Field Maker Training is an innovative project designed by the English and professional subject teachers for the students to utilize English and professional knowledge to solve practical policing problems, investigating and exploring in the policing field and designing solutions, applying and revising, improving and re-checking until the presence of final solutions under the guidance of the tutors and with the cooperation of the team members.

2.2 Design of the Maker Training

Before assigning to the task to the students, the teachers design the contents of the maker training based on the textbook of English for Policing, analyzing language points, teaching focuses and teaching contents on the basis of the following principles shown in Table 1:

Design principle	Contents
Relevance	Relevant to the students' life and future career.
Interdisciplinary	Mainly to train the comprehensive competence of English, and the professional knowledge, IT and other vocational skills.
Inquiry-based	The training process is to reveal, ask, analyze and solve problems, stressing the development of problem consciousness, encouraging the thinking of seeking different answers and to be innovative, cultivating their scientific spirit to explore, create and seeking truth.
Project-based	To design projects reflecting the themes and integrate engineering knowledge, revise and re-design through new knowledge.
Innovative	To improve their abilities in daily life and future vocational skills, such as critical thinking, independently looking up relevant information, applying information in the solving of the practical problems innovatively, verifying the effectiveness of the solution, learning from mistakes, proposing new solutions, cooperating with others and democratically making decisions.
Complicated	To start with, frameworks, like tasks, concepts and standards, are designed to liberate the students' thinking and think differently from others so as to strengthen the innovative consciousness of the trainers.
Experience-oriented	Learners experience and introspect their passion, action and strategy in the process of the maker practice or in the specific case study through participation and interactions to master skills, strategy and develop abilities and behaviors, finally to establish passions, attitudes and vision.

Table 1. Design Principles for English Policing Field Maker Training

Challenging tasks for each unit of the Policing English textbook *English for Elite Police* [6] are designed as shown in Table 2:

Table2. Challenging Tasks for Each Unit of *English for Elite Police*

Unit	Challenging task	Contents	Ways/Outcomes
1 POLICE ACADEMY	<i>Visits of Foreign Delegation</i>	Metropolitan police are coming to our campus, make a schedule from meeting at the airport to seeing them off at the airport, including showing them around the campus, visiting a police station.	Scenario training/Video
2 POLICE ADMINISTRATION	<i>Online Police Departments</i>	Set up various types of police institutions on line (like a police station, a patrol squad, a detective squad).	IT/Software
3 FOREIGN AFFAIRS ADMINISTRATION	<i>Alien Administration Report</i>	Write a report on Alien Administration in your city.	Investigation and research/Report
4 CRIMINAL INVESTIGATION	<i>Criminal Investigation Technology Design</i>	Your personal experiences on criminal investigation and the countermeasures to some defects you found in the experience.	Personal experience/essay
5 CRIMINAL TECHNOLOGY	<i>On Footprints Extraction Technology</i>	Write a report on how to extract footprints in the lab, the outcomes or suggestions for improvement on the technology.	Experiment/Report
6 SOCIAL SECURITY	<i>Security Countermeasure for Our Academy</i>	Find out security protection problems in our academy and the countermeasures.	Field investigation/Project
7 TRAFFIC CONTROL AND SAFETY	<i>Traffic Control for Yingping Road</i>	Find out disadvantages of the present traffic control in front of the Academy gate, your solutions and the implementation outcomes.	Field investigation/Project
8 SECURITY GUARD	<i>Security Guard Measures for the Sports Meet</i>	Security protection measures for major collective activities such as the sports meet.	Practical problems/solutions
9 CYBER CRIMES	<i>A Case Study</i>	Find one typical cybercrime on line and how it was solved, what have you learnt from the case? If you were responsible for the case, what were your measures?	Problem investigation/report
10 CRIMINAL JUSTICE	<i>Inmates Administration</i>	If you were a prison administration police officer, how would you control and educate the inmates?	Games/Summary
11 INTERNATIONAL LIAISONS	<i>English Translation of Traffic Signs</i>	Check the English Translation of traffic signs in Dalian and Liaoning Province, problems, suggestions, discussions or puzzles.	Field investigation/Project

Evaluation standards are also set up to ascertain the skills and knowledge (quantitative index) for the students to acquire, such as practical data statistics, application effectiveness evaluation data to make the students work in the fields, investigate, inspect, interview or revise and adapt to fulfil the task. Participants are informed of the project operation time, the division of the training teams, running ways and evaluation standards.

III. Traffic Signs English Translation Field Maker Training

After applying, replying and announcing to the public, our project *English Policing Field Maker Training* was approved as a National College Student Innovative and Corporate Project in July, 2018. To tentatively start our trial work and get prepared for the formal research in March, 2019, a maker training program aimed at traffic signs English translation was practiced soon after the approval. A QQ group No. 472116508 was set up and four participants of the project were invited to the group to fulfil the following process:

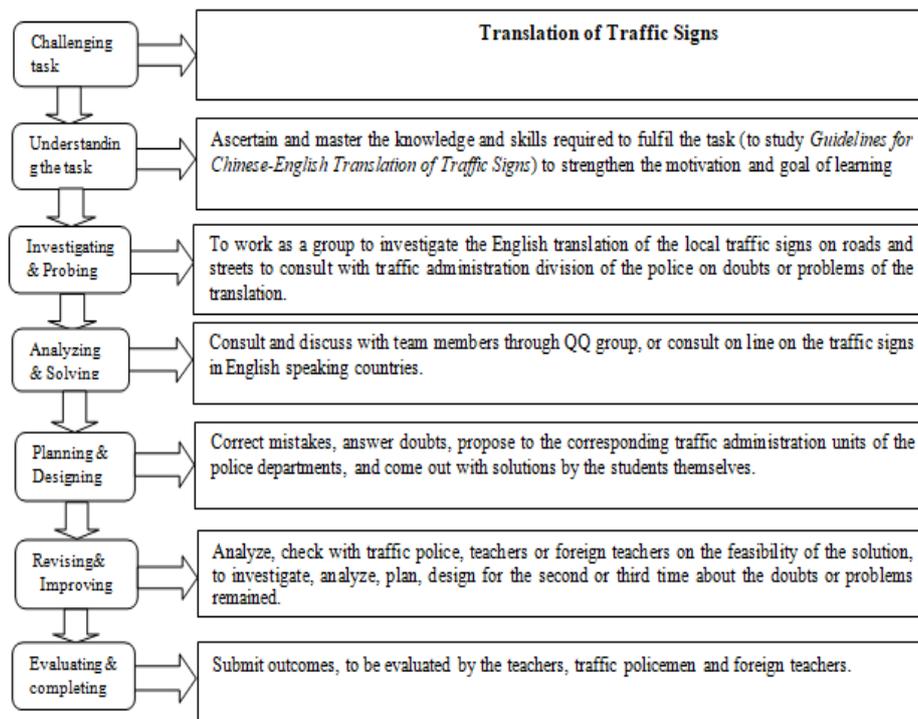


Fig. 1 Research procedures for the project *English Translation of Traffic Signs*

After a thorough study on the paper *A Study on the Guidelines for Chinese-English Translation of Traffic Signs*[7], the participants check, investigate and take photos of the traffic signs English translations they think inappropriate in their hometown city, send these photos to the QQ group, talk with traffic policemen, ask their English teachers, consult online on traffic signs in English speaking countries or foreign teachers from US, Australia before coming out with their final solutions or suggestions. They send their solutions to their local traffic police administration department for then to correct, re-consider or revise.

IV. Outcomes and Discussions

One team started from Dalian and arrived in Chongqing to investigate the English translation for traffic signs via Beijing, the capital of P.R. China, Xi'an and Chengdu at the end of July, 2018. In addition to finding problems of the translation, the team aimed to compare the translation for high-speed train station in these cities, for there are two different translations in the country at present. Most of the high-speed train are newly built out of the city in four different directions, one group believe that the direction of the station is a common noun, so it should be translation into English, the typical translation of this group is Beijing, like Beijing South Railway Station, Beijing West Railway Station, to inform directly the location of the railway station to foreigners, see Fig. 2; the other group believe that because the high-speed train names every station in Chinese alphabet and consider the direction as a proper noun, the translation of the station has to keep consistent with it, the typical city is Chengdu and Xi'an, see Fig. 3:



Fig. 2 English translations



Fig. Alphabetic translations

According to 2.1.2 of *Guidelines for Chinese-English Translation of Traffic Signs: Translate words indicating directions usually into English, e.g.,*

大连北站	Dalian North Railway Station
南广场	South Square

We believe that English translation is correct and call for the unification of English translation of high-speed train railway stations nationwide.

Other problems we found on our way include confused usage of upper and lower-case letters and incorrect utilization of punctuational marks in Chengdu. One suggestion adds to our guidelines is that every place name can be all capitalized to be easily recognized.

Surveys show that all the participants are under pressure to be on the spot to apply the knowledge they learnt, they feel more motivated and interested on learning, in the process of analyzing authentic problems, consulting relevant information, designing possible solutions, revising and checking, they apply interdisciplinary knowledge and skills in depth, furthermore, new problems or suggestions are also found in the hands-on field training.

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