Cognitive Linguistics Theoretical Support to the Application of Flipped Classroom Mode

—with a Focus on English for Cabin Service Course

Chenxin Zhou

Tourism and Management Department
Wuhan College of Foreign Languages and Foreign Affairs
Wuhan, China
zhouchenxin110@126.com

Abstract—The aim of the experimental study is to test the significance of constructing a new flipped classroom mode. After summarizing the origin, development, features and different types of flipped classroom, the English for Cabin Service course is taken as an example to illustrate how to construct a flipped classroom instruction with cognitive linguistics as its carrier. A communicative, action-oriented and learner-centered English flipped classroom is built up through the cognitive-experiential access route like prototype theory and script theory. The results from the learners' after-class feedback have shown that the application of the flipped classroom mode has developed students' English learning motivation, improved their intercultural competence and enhanced their English communicative ability. It is hoped that implementation of this new teaching mode can further promote the integration of cognitive linguistics theories and English language teaching.

Keywords—cognitive linguistics; prototype; script theory; flipped classroom mode

I. INTRODUCTION

Accompanied by the continuous surge of updating education ideas, the integration of information technology and curriculum is deepening which calls for the suitable instructional design. The flipped classroom mode was remarked as one of the most important technological reforms in classroom instruction in 2011 by *The Globe and Mail*. Nowadays, the flipped classroom is initiating a new wave of education reform both at home and abroad. The flipped classroom was first implemented in some of American's primary and secondary schools and then applied to the higher education schools such as the University of Miami and Middle Tennessee State University [1]. In China the newly-published *10-Year Development Planning of Educational Informatization (2011-2020)* has brought in a trend of carrying out project-based learning, virtual learning and micro-courses learning methods in the flipped classroom instruction, like Chongqing Ju Kui Middle School [2].

A number of the pioneer teachers have adopted the new teaching philosophy and lead the way of implementing this methodology in their classroom instruction. A survey made by an American education consulting company named Classroom Window have collected comments and feedback on 500 teacher views to see what their students' learning performances would be like after they flipped their classroom [1]. About 80 percent of the surveyed students admitted the positive effects of flipped classroom on their learning performance and the great improvement in their learning attitude. Since the value of the flipped classroom teaching has been recognized by more and more education experts and teachers, it is worth exploring the possibility and significance of implementing the innovative flipped classroom instructional design in the College English teaching in China.

Recent researches have demonstrated how to embed the modern informational technology into the traditional classroom, how to design the effective flipped classroom structures, how to reorganize the teaching contents and how to make use of the virtual learning platform [3]. However, the empirical study of implementing the cognitive linguistics supported flipped classroom on a specific course is limited in China. Thus the present study was designed to analyze the possibility and significance of applying the prototype theory and script theory in the construction of a learner-centered, action-oriented and project-based English flipped classroom. An experimental study is undertaken to test how this methodology works on the English for Cabin Service course.

II. LITERATURE REVIEW

A. The Origin and Development of Flipped Classroom

The concept of flipped classroom (or "inverted classroom") was first clearly put forward by Lage and Platt [4][5] who published two relevant papers in the Journal of Economic Education. In 2004, Salman Khan, a hedge fund analyst, began posting math tutorials on YouTube to help his cousin learn math, which in result caught other peoples' attention that were apparently eager to learn via his learning videos. Inspired by the thought of benefit more people, in 2007 Khan set up a non-profit organization called "Khan Academy" with the mission of providing a free world-class education to anyone and anywhere. In six years he has posted more than 2,000 tutorials on an array of topics, which are viewed nearly 100,000 times around the

world each day. It is now the most-used educational video repository on the Internet with over 1 million students to use per month. In 2011 Salman Khan made a speech titled *Let's use video to reinvent education* at TED conference where he talked about his amazing online learning tool and his idea about future education.

Later on, three professors—Gerald C. Gannod, Janet E. Burge and Michael T. Helck from Miami University have flipped their Software Engineering course, Data Structure course and An Introduction to Program Designing course respectively. Other two representative teachers from American Woodland Park High School named Jonathan Bergmann and Aaron Sams also penetrated the new instructional idea into their classroom instruction. Before class they designed the micro-course videos and assigned homework to students, then in class teachers had the peers actually been able to interact with each other while they were humanizing the classroom and working with students together. It freed up time for the projects, for the games and for the group works in class.

In the 21st century, under the influence of information technology, social-cooperative education and international open education philosophy, the Flipped Classroom, Blending Learning, Just in Time Teaching emerged and became the hot educational topics [1]. The extensive use of advanced information technology should be encouraged, computer- and web-based courses should be developed and students should be provided with favorable environment and facilities for language practice.

B. The Features of Flipped Classroom

In the traditional classroom, due to certain teaching workload requirements, a teacher who plays the leading role in class has to give the one-size-fits-all lecture to students without taking into consideration of every student's cognitive feature [6]. Meanwhile as the knowledge takers, students are busy listening to the lectures and cramming the notes, thus lacking of time to communicate with teachers or reflect on what they've learned in class. After taking lectures, a great amount of homework is left for students to do on their own. At the end of the term, exams are carried out by teachers as the main tools for evaluating students' learning performance.

Now by removing the one-size-fits-all lectures and letting students have self-paced lectures at home, the priority is given to arouse students' learning motivation. Teachers no longer act as the commander controlling of the whole learning process. Instead they are like the tutors, mentors or coaches who will assist and collaborate with students in the individualized-oriented flipped classroom [6].

Except for the readjustment of in-class instructional design, teachers also have to mix the virtual learning resources with the in-class learning materials through the online learning platform under the informational technology environment. Nowadays Media Core Video Learning Platform, E-Front Learning, Edmodo, Flipped Lessons, Blackboard, Moodle, Sakai are the well-known e-learning platforms [1]. With smart-phones, slates and laptops in hands, students can access to the study materials via their phones anywhere they have mobile connection. Through the learning platform, students could get fast browsing experience and rich learner experience by watching the updating micro-learning videos ahead of class, getting real homework done—not just viewing but collaborating, and working with apps on their phone or PC. Classroom time is for fast assessment about homework, assimilation-oriented discussion, demonstration and peer evaluation which intends to cultivate students' team spirit, self-learning ability and problem-solving ability.

C. Different Types of Flipped Classroom Structure

Some representative experts have summarized different types of the flipped classroom structures as follows.

In 2011 Jacki Gerstein [7] constructed a Ring Flipped Classroom Mode with four teaching phases: experiential engagement phase, concept exploration phase, meaning making phase and demonstration& application phase.

Robert Talbert [8] put forward his flipped classroom structure idea based on his classroom teaching practice. According to Talbert, the typical teaching procedures go through two steps: before class and during class. Before class, students watch video lectures and do guided practice. During class a teacher makes fast assessment, solves assimilation-oriented problems and gives debrief and feedback.

Zhong Xiaoliu [1] combined the flipped classroom concept with the Chinese traditional Tai Chi thinking and Bloom's taxonomy of educational objectives to construct a Tai Chi Ring Flipped Classroom Model in which he integrates social environment and school environment, virtual resources and school resources, class time and extracurricular time, and four teaching stages (preparation stage, memorization stage, comprehension stage, demonstration stage and evaluation stage) together.

D. The Cognitive Linguistics Theories Applied in the Flipped Classroom

The cognitive linguistics provides us with the most accurate, systematic and complete language teaching model [9]. According to the cognitive linguistics education philosophy, learning and teaching strategies with a clear preference for action-oriented and learner-centered methods are highly appreciated. Combining with teaching objectives, teaching strategy and teaching access routes, students' communicative skills and intercultural competence is built up in the foreign language classroom, the action-oriented and learner-centered method should be used and the cognitive-experiential access routes to the foreign language through prototype, basic level and script theory are included [10].

Based on the language experiencing rule, vocabulary-language continuity rule, conceptualization rule and pragmatic use rule, we construct the flipped classroom mode supported by the relevant cognitive linguistics theories. It relies on the classroom experiencing activities, repetitive training, prototype vocabulary theory, event scripts forming, concept construction and dialogue outputs [11].

III. The Implementation of Flipped Classroom

According to the *College English Curriculum Requirements* (2007), the objective of College English is to develop students' ability to use English in a well-rounded way, especially in listening and speaking, so that in their future studies and careers they will be able to communicate effectively, and at the same time enhance their ability to study independently and improve their general cultural awareness. The English for Cabin Service course is suitable for implementing the flipped classroom mode because as English for Specific Purposes (ESP) course it is not only a language course that provides basic knowledge about English, but also a vocation-guided course that prepares students with the future job required skills. Thus requirements for cultivating students' competence in listening and speaking should be fully considered. Meanwhile the pragmatic communicative ability, vocation-concerned skills and cross-culture awareness are emphasized in the instructional design.

The flipped classroom mode supported by cognitive linguistics theory, micro-course resources and virtual learning platform is embodied in the three teaching procedures: before class, during class and after class. Before class micro-course lectures and homework are a necessity for students to acquire new knowledge. During class students solve perplexed problems through real-situation language practice under the prototype theory guide, then form an event script in mind and finally demonstrate the learning result. After class peer assessment and learning feedback are requested. In the whole process teachers design coherent activities from simple level to advanced level, assign tasks for groups to discuss and cooperate with each other, help students out with queries, create real communicative situations for them to practice and give students instant and effective feedback. See in Table 1.

TABLE I. THE FLIPPED CLASSROOM STRUCTURE UNDER THE COGNITIVE LINGUISTICS THEORY

Before class	During class	After class
Micro-course video	Teacher assessment	Peer assessment
Homework/ Self-assessment	Prototype theory used in vocabulary	Feedback
	Forming an event script	
	Real situation practice	
	Demonstration/Video recording	

The following part attempts to present how to implement the cognitive linguistics theory-based flipped classroom. We will take Unit 7—Drinking Service from the English for Cabin Service course as an example.

A. Before Class——Imparting Knowledge

This class will establish a web-based teaching model which suits students' own needs in line with their own English proficiency and deliver the classroom lecture via a free and open e-learning platform—Lan Mo Cloud Class Application. Before class the teacher will design a 10-minute micro-course video about the etiquette and procedures of cabin drinking service and upload it to Lan Mo Cloud Class Application. Also the teacher will upload the audio recordings about the important cabin service words, expressions and dialogues to the learning platform. Students have to watch the videos first, imitate the pronunciation of those vocabulary and sentences and record their own audio files before coming to class.

B. During Class——Assimilating Knowledge

With regard to computer- and web-based courses, face-to-face coaching should also be provided in order to track down, record and check the progress of learning, and attain to a high level of interactivity, multimedia-use and operability. The flipped classroom teaching goes through the following four steps:

- Step one: A fast assessment about students' mastery of the online lecture, including a quick Q&A about the important contents in the video and group discussion about the problems encountered in the video.

- Step two: The prototype theory is used in memorizing cabin drinking words and service terms. Words should not be learned in isolation, but embedded in context as they are used in natural communication. Yet introducing and practicing every word in a natural context is very time-consuming so teachers assemble words in lexical fields of related meanings. According to the status of image schema, the part-whole organization is easier to memorize than the taxonomic type of hierarchies. So experienced teachers would exhaust the possibilities of part-whole links before moving on to type-of relations. However, cases are not the same. Though subordinate categories may be regarded as supplementary for the ordinary learner, they will be crucial in teaching English for special purposes [10]. Let's take alcoholic drinking vocabulary in Table 2 as an example.

TABLE II. TYPES OF HIERARCHIES IN ALCOHOLIC DRINKING

Super ordinates	Basic level	Subordinates
Alcoholic drinks	beer	Budweiser®
		Miller® Lite
		Heineken®
	cocktail	Trader Vic's®
		Crafthouse®
		Moscow Mule
	wine	Hess Collection
		Reliz Creek
	liquor	Vodka®
		Canadian Club®
		White Label®
		Jack Daniel's®
	liqueur	Baileys®
		Grand Marnier®

It could be seen from Table 2 that words related to cabin drinking service are organized according to type of hierarchies' relations. So quite obviously, the vocabulary training for English cabin drinking service, for example, should not be concerned with basic level terms, but employ a much finer grid of terminological distinctions.

- Step three: The script theory applied in class. Obviously cognitive categories play a major role in frames. The script theory is used in demonstrating the cabin drinking service procedures. For example, in the [DRINKING ON A PLANE] sub-frame you will not expect to have your drink served the same as at a restaurant. All these expectations that are based on our experience and stored in our long-term memory are part of the frame-system and influence our ability to produce and understand the language related to it [10].

On a general level, the [DRINKING SERVICE] script can be divided into several scenes. In order for the scene to occur, a number of conditions must be fulfilled as summarized in Table 3:

TABLE III.   PRECONDITIONS OF THE [DRINKING SERVICE] SCRIPT

Props	Roles	Conditions
trolley	Passengers(P)	P is thirsty
drinks (D)	Flight Attendants (FA)	P is awake
cups		
tray table		

The [DRINKING SERVICE] script concerning the people and the objects makes up the situation. Each of these actions is a prerequisite for the next to be performed, and the whole scene taken together is necessary for the ensured scene to take place in which the drinking is ordered. The ordering scene is represented in somewhat greater detail in Fig. 1 (at the end of the paper). In Fig. 1 the actions that are performed by the participants are expressed in a very basic kind of language which is similar to the commands used in a computer program.

How is the ordering scene integrated into the script? Fig. 1 shows that when the scene begins, two states of affairs are possible: the FA may introduce the drinking to P or the P may ask for a drink them. Depending on which of these two states applies, the script runs along two different paths, which should however all end with the P choosing the drinks they want. The next step is serving drinks, which is communicated to the FA who pours the drinks and hands it to the P. When this happens, there are again three alternative continuations of the script. The P accepts it with thanks and drinks it, the P accepts it with thanks and puts on the tray table, or the P drinks it and asks for a refill.

Based on the [DRINKING SERVICE] script, students could form a clear logic about how to serve the drinks to different passengers, then create real language communicative situations and have large amounts of peer practice under teacher's help in class.

- Step four: After practice students demonstrate their peer works one group after another in class. Every student in class has to play a certain role in the cabin drinking service performance whether to be a flight attendant or a passenger. Their performing demonstration will be recorded as videos by teacher through a smart phone or a camera. It not only helps teachers obtain teaching feedback but also provides students with an effective means to adjust their learning strategies and methods improve their learning efficiency and achieve the desired learning effects.

C. After Class——Evaluation and Feedback

The evaluation of students' learning consists of formative assessment and summative assessment. Formative assessment takes such forms as keeping a record of students' in and outside of classroom activities and online self-learning data, keeping files on students' study results, and conducting interviews and holding meetings. This allows students' learning processes to be subjected to observation, evaluation and supervision, thus contributing to the enhancement of their learning efficiency.

In the cognitive linguistics theory supported flipped classroom, the formative assessment is conducted in the teaching process which includes students' self-assessment before and after class together with peer and teacher assessment in class. After class, teacher will also upload the classroom recorded videos to the Lan Mo Cloud Class Application. Students are requested to watch their videos repeatedly, pick out their frauds and hand their audio files back to teacher as the classroom learning feedback. For the students with poor performance, teacher will have personal meeting with them after class.

IV.   CONCLUSION

After the introduction of concept, features and different modes of flipped classroom, this paper makes an experimental study of implementing a cognitive linguistics supported flipped classroom mode in the English for Cabin Service course. The adoption of the flipped classroom mode is of great significance to College English teaching. Based on the data collected from students' audio files, about 80 percent of the interviewed students prefer the flipped class to the traditional class. They report that the micro-course video is professional and useful, the classroom activities are motivated, and video recording demonstration is an effective way of testing their learning performance. They also agree that in the flipped classroom they are more willing to participate in those activities because they care about their performance in the final video recording demonstration. We hope this paper throws some new light upon the innovation of English language teaching in the process of deepening the reform of College English teaching.

Since the limitation of time, there are some shortages in the research. For instance, the number of students participating in the flipped classroom is limited and the teaching contents applied in the flipped classroom are not enough. Further studies

on how to better design the foreign language instruction supported by cognitive linguistics theories are needed.

REFERENCES

[1] He Chaoyang, Ou Yufang and Cao Qi, "Inspiration of USA Universities' Inverted Classroom Teaching Model." Research in Higher Education of Engineering, vol. 2, pp. 148-151, February 2014.

[2] Zhong Xiaoliu, Song Shuqiang and Jiao Lizhen. "Instructional Design Based on the Idea of the Flipped Classroom in ICT Environment". Open Education Research, Vol. 19, pp. 58-64, February 2013.

[3] Fulton, Kathleen. "Upside Down and Inside Out: Flip Your Classroom to Improve Student Learning. Learning & Leading with Technology", Vol. 6, pp. 12-17, September 2012.

[4] Lage, M. J., & Platt, G. J. (2000a). "The Internet and the inverted classroom". The Journal of Economic Education, Vol. 31, pp. 11, October 2000a.

[5] Lage, M. J., & Platt, G. J. (2000b). "Inverting the classroom: A gateway to creating an inclusive learning environment". The Journal of Economic Education, Vol. 32, pp. 30-43, November 2000b.

[6] Aaron Sams & Jonathan Bergmann. "Flip Your Students' Learning." Educational Leadership, Vol. 3, pp. 16-20, February 2013.

[7] Gerstein, J. (2011). The flipped classroom model: A full picture [EB/OL]. [2012-12-19]. http://usergeneratededucation.Wordpress.com/2011/06/13/the flipped-classroom-model-a-full-picture.

[8] Talbert, R. (2011). Inverting the linear algebra classroom [EB/OL]. [2012-12-19]. http://prezi.com/dz0rbkpy6tam/inverting-the-linear-algebra-classroom.

[9] Taylor, J. R. Some pedagogical implications of cognitive linguistics. Berlin/New York: Mouton de Gruyter, 2008.

[10] F. Ungerer & H. J. Schmid. "An Introduction to Cognitive Linguistics." Beijing: Foreign Language Teaching and Research Press, 2010.

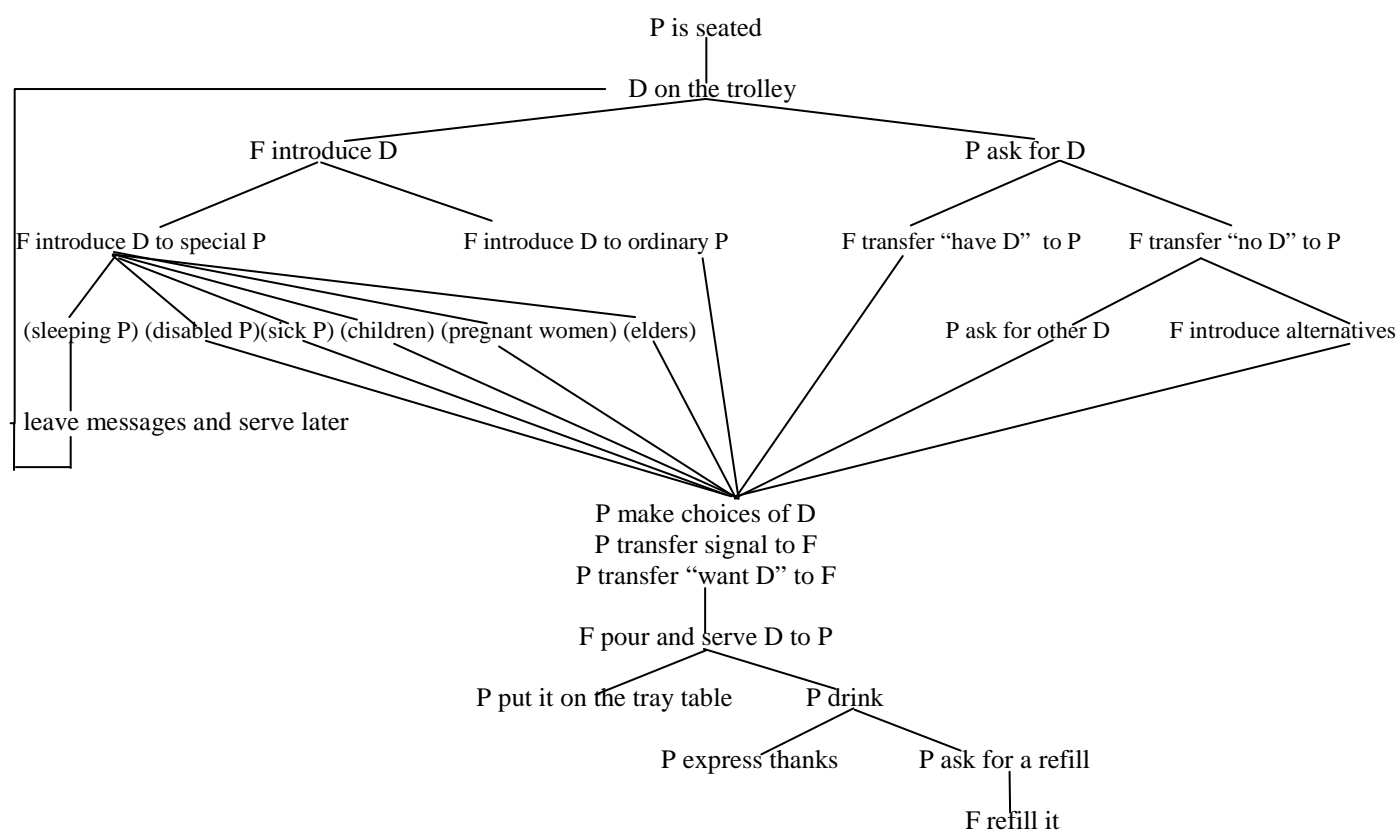[11] Holme, R. Cognitive. "Linguistics and Language Teaching". Beijing: Foreign Language Teaching and Research Press, 2011.

Fig. 1. Ordering beverage scene of the [DRINKING SERVICE] script