

Study on Engineering Professional English Teaching Based on “Hidden Curriculum”

Xi-qiu Zhang^{1,a}, Chang-li Yu^{2,b,*} and Shou-wen Pang^{1,c}

¹Shandong Jiaotong University, Weihai, Shandong, China

²Harbin Institute of Technology (Weihai), Weihai, Shandong, China

^azhangxiqiu165@126.com, ^byuchangli0123@163.com, ^cshwpang@126.com

*Corresponding author

Keywords: Hidden curriculum, Engineering, Professional English, Knowledge model construction.

Abstract. Engineering professional English is characterized by professionalism and practicality, and it is of great significance to develop the foreign language quality by studying the construction method of “hidden curriculum” for professional English. In the present study, the basic theories of “hidden curriculum” is summarized and the downside of it has been pointed out based on the analysis of four development aspects. Furthermore, the construction strategy of engineering professional English “hidden curriculum” is put forward based on the combination of theoretical analysis, classroom design and indicator evaluation, which is to reveal the effective strategy and implementing scheme of “hidden curriculum” construction and to probe the application regularity of implicit linguistic knowledge construction model in the subject-based English (SBE) teaching in engineering subjects by analyzing the definition, relation as well as mechanism of tacit and explicit knowledge.

1. Introduction

In 2014, the Chinese Ministry of Education set some measures including improving teaching method in order to promote College English teaching Reform and truly to improve the students' English proficiency. At present, to a great extent, College English Teaching Reform at home is limited to the innovation of Basic English language teaching methods. In fact, close attention should be paid to the teaching reform of professional English. Chinese engineering colleges have been teaching professional English for undergraduates since 1980s', what's more, professional English is commonly available in domestic universities, which is set to be the academic degree course in most colleges. That's because professional English is helpful for the employment of students majoring engineering of high applicability, for example, the students in Marine Engineering mostly serve for the ships on the ocean route, so the professional English becomes the foundation of their jobs. Therefore, it is of high significance for improving the student quality to enhance the reform of professional English in engineering colleges.

On one hand, although with the in -depth development of English teaching reform, some new foreign language teaching methods in classroom have emerged, but most of the new classroom teaching lacks of theoretical support, and the improvement of foreign language teaching level in classroom has certain limitations. On the other hand, SBE teaching in engineering subjects itself is characterized of strong professionalism and strong practical demand. It is difficult to effectively establish a knowledge acquisition channel for students in the traditional classroom teaching method. Therefore, as for the SBE teaching in engineering subjects, constructing a language knowledge acquisition model based on the effect mechanism of tacit knowledge and exploring effective ways to solve the interface problem between explicit knowledge and tacit knowledge can bring into full play the positive effect that tacit knowledge on improving teaching efficiency as well as explore students' creative potential and cultivate students' self-learning ability, which is important for boosting professional foreign language teaching reform and realizing quality foreign language classroom construction.

2. The Theory and Development Trend on “Hidden Curriculum”

“Hidden curriculum” means respecting and making full use of the association and the mutual promoted effects between tacit knowledge and explicit knowledge with the traditional teaching way of the obtaining explicit knowledge to improve the teaching efficiency. Furthermore, explicit knowledge can be represented by symbol system (language, mathematical formula, icons, Braille’ Flag Language) while tacit knowledge cannot be expressed.

Nowadays, classroom teaching is still the main method of college foreign language teaching (including basic foreign language teaching and specialty foreign language teaching), and it is an effective way to teach with explicit linguistic knowledge in the classroom consciously, however, that leads to the learners resting on explicit knowledge study.

Moreover, the natural language communication mainly relies on automatic tacit knowledge, since explicit knowledge cannot be applied to real time communication for learners. New forms of college foreign language teaching such as “immersion teaching”, “communitive classroom” and “foreign language teaching paying attention to language forms”, strongly supports the conclusions above.

In the previous study, the effect mechanism of tacit knowledge on foreign language teaching and the construction strategy of “hidden curriculum” have been researched. In the aspect of classroom construction, Li (2011) studied the interface theory of explicit and tacit knowledge in foreign language teaching. He pointed out that explicit knowledge can transform into tacit knowledge by strengthening practice, and then the tacit knowledge can furtherly convert to explicit knowledge [1]; Wang (2014) investigated the effect of foreign language classroom setting on learners’ pragmatic competence development [2]; Sun (2015), the scholar in China University of Mining And Technology, anatomized the hidden curriculum from the aspect of “me media” and pointed out that it is important for college teachers to combine hidden and explicit curriculum while teaching [3]; Zhou (2017) aimed to solve the problem of deficient motivation to encourage students training English ability, and quest the design and the application of the hidden curriculum in English teaching [4]; Borges and Ferreira (2017) studied the effect of “hidden curriculum” on student organizations including learning, practice, socialization and responsible management [5]; McKenn and Williams (2017) carried out a study to examine near-peer learner and teacher experiences of participation in near-peer learning and to explore students’ engagement beyond the skill being learnt [6]; Zhang and Wang (2018) designed and practiced the hidden curriculum in online communities from the dimensions of the study environment, law, core knowledge as well as value orientation [7].

These researches can be categorized to four aspects:

1) The effect of tacit knowledge on the single item of foreign language teaching, such as grammar, oral English or listening. In this aspect, it mainly investigates how implicit teaching improves the ability of foreign language learning. However, this research direction is still the foundation level of tacit knowledge, whose research object mainly focuses on the learners with shorter learning time, for example, the high school students.

2) The revelation of the correlation between tacit and explicit knowledge to foreign language teaching, the research direction of which is about the mutual transformation relationship between tacit and explicit knowledge, and to probe organic combination of explicit and implicit teaching to help learners develop the linguistic competence.

3) The interface between tacit and explicit knowledge. In this research direction, the relation between the two kinds of knowledge is interpreted by Non-Interface Position, Strong-interface Position and Weak-interface Position. What’s more, it is proposed in a new research that the access to retrieve the two types of knowledge can be transformed, but not the knowledge proper.

4) Implicit linguistic knowledge model should be constructed and the “hidden curriculum” should be developed to promote the teaching reform. For this research direction, the humanity and expandability of the hidden curriculum in the college English teaching reform is analyzed on the foundation of tacit knowledge effect mechanism, which offers a new direction for college education reform practice. However, the research on the specific and effective methods of the construction of hidden curriculum is not perfect.

Comparative analysis for four levels of research above is carried on and it finds that the first level has limited value in college English teaching reform. In the second and the third layer, it is the theory foundation of the college English teaching reform. Furthermore, in the fourth layer, it provides the ultimate solutions for “hidden curriculum” on the research bases of the second and the third layer. In the aspect of the effect of “hidden curriculum”, on one hand, it conducts the principles of “student-oriented”, in which way the learner autonomy is given full play to, and it complies with college quality education. On the other hand, “hidden curriculum” aims at offering the effective transfer between tacit and explicit knowledge, which is beneficial for the tacit knowledge to play a role in teaching, for example, to improve the teaching effectiveness.

Although “hidden curriculum” is being paid more attention to at present, the related research is imperfect, the key of which is that the tacit knowledge mechanism and the construction of “hidden curriculum” are usually studied partly. What’s more, the professional English in engineering university is seldom been taken as a research object.

3. The construction strategy of “hidden curriculum” of subject-based English (SBE) in engineering subject

The “hidden curriculum” of SBE in engineering subject requires theoretic analysis, class design and index evaluation. The tacit and explicit knowledge should be defined firstly, and the effective strategy and implementing scheme of the construction of “hidden curriculum” is revealed. Finally, the application regularity of implicit linguistic knowledge construction mode in subject-based English(SBE) teaching in engineering subjects will be probed, which provides a reference for SBE teaching reform in engineering subjects. The concrete construction strategy of “hidden curriculum” is shown as Fig.1.

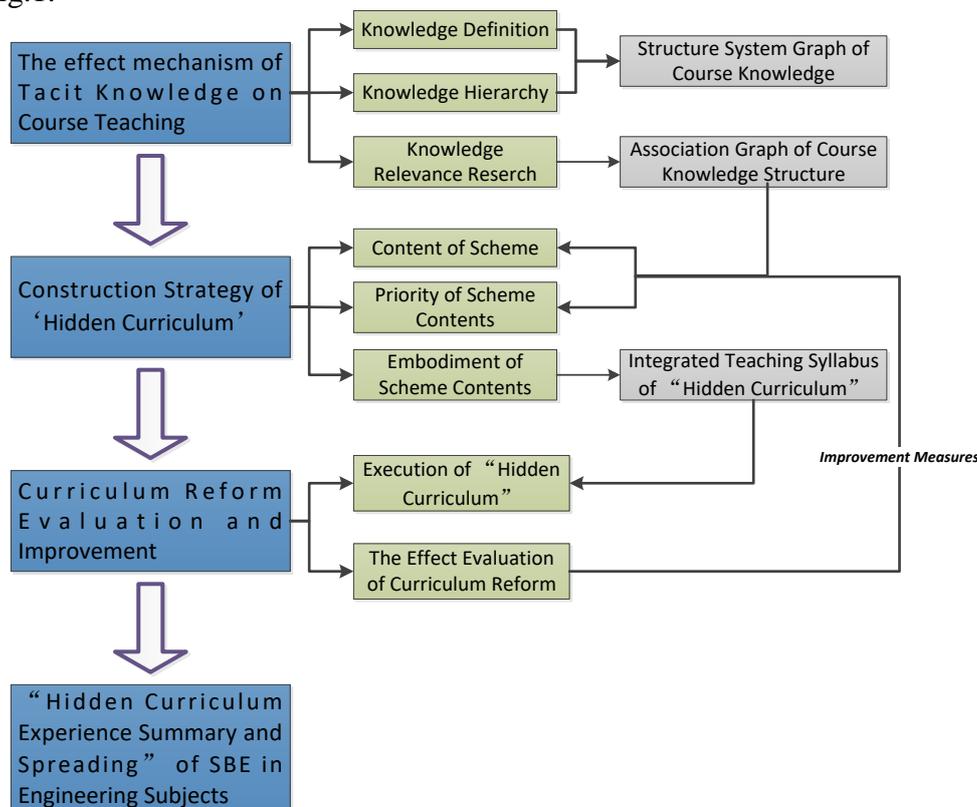


Fig.1. The teaching strategy of SBE teaching in engineering subjects based on “hidden curriculum”

3.1 The effect mechanism of tacit knowledge on teaching

Based on the tacit knowledge construction model in English linguistics, the explicit knowledge and tacit knowledge involved in the SBE in engineering majors are classified based on the aspects of professional content and English foundation. As for the objective knowledge learned in classroom, it

is defined as explicit knowledge, such as professional nouns. As for the knowledge acquired from perceptual learning, it is defined as tacit knowledge, such as daily communication English. According to the coverage relationship among different kinds of knowledge, the knowledge hierarchy is divided and association graph of knowledge structure is drawn.

Analyze the relevance among all kinds of knowledge (including whether they relate to each other and the degree of association), and estimate the interaction mode of them to obtain the association graph of knowledge structure. Furthermore, analyze and qualify the function grade of the items on the association graph to improve the teaching efficiency on the bases of learner’s comprehensive mastery of knowledge. The knowledge construction of “Marine Engineering English” is taken into an example as shown in Fig. 2.

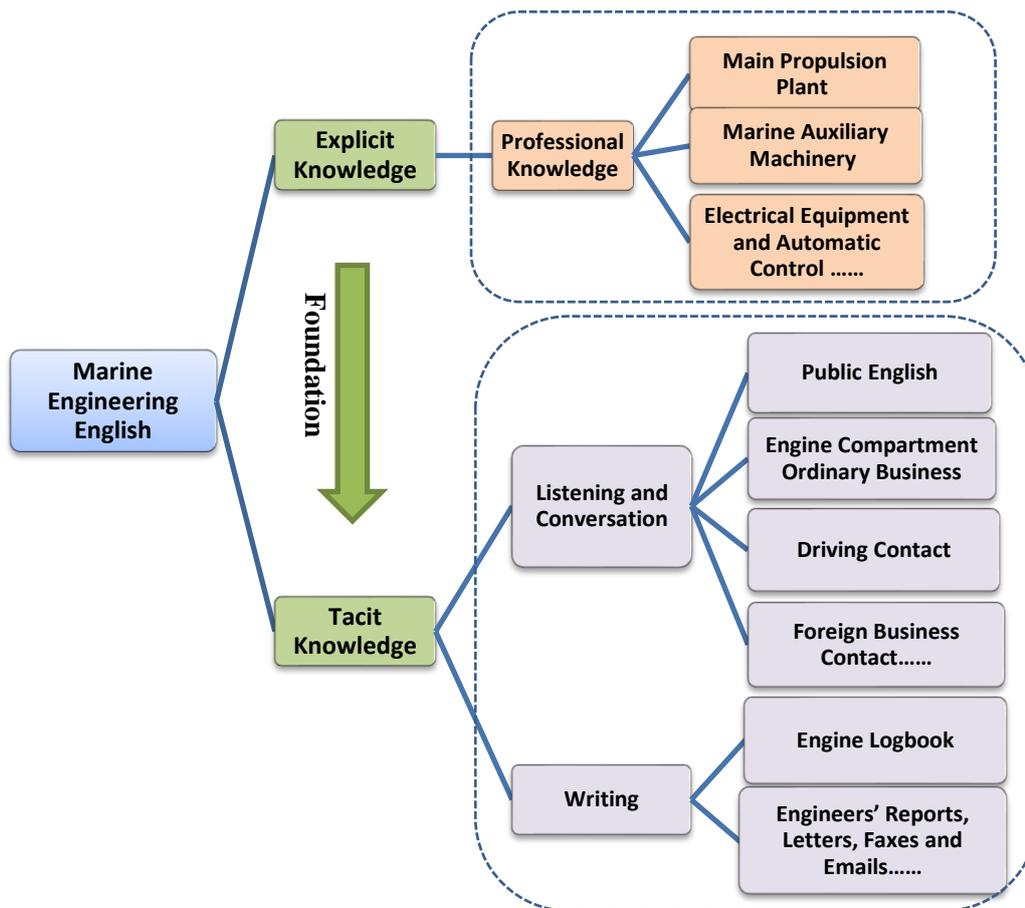


Fig. 2. Knowledge Construction Diagram of “Marine Engineering English”

3.2 The construction scheme of “hidden curriculum”

Constitute the construction scheme with priorities of “hidden curriculum” from the aspects of teacher allocation, teaching hardware, subject design, system guarantee and other factors, based on the study of the effect mechanism among the knowledge of SBE in engineering subjects in 3.1. The basics principles are listed as follows:

(1) As for the decisive condition of “hidden curriculum”, it should be guaranteed through corresponding strategies, such as teacher allocation.

Guarantee condition for “Marine Engineering English” is taken as an example, the multimedia equipment, school assignment and examination and so on are necessary conditions for explicit knowledge acquisition. Comparison, practice lessons and practical training are significant conditions for tacit knowledge acquisition.

(2) It is shown in the research of knowledge mechanism that the relevant strategies and programs should have higher priority in terms of improving the relevance of teaching efficiency.

(3) For the aspect of the mechanism research that is not very important to improve the relevance of teaching efficiency, the corresponding strategies and schemes may have lower priority, but should be guaranteed by appropriate strategies and schemes.

Based on the "hidden curriculum" construction plan, the content, teaching methods and schedule of SBE in engineering subjects are re-planned to form a complete teaching plan for the "hidden curriculum" of engineering English.

3.3 Curriculum reform assessment and improvement

Formulate measurable curriculum teaching effectiveness indicators (including student engagement, classroom atmosphere, and knowledge mastery of students). For the teaching effectiveness evaluation indicators, the effect of the curriculum reform and propose further improvement plan is evaluated by comparing the teaching effects of the pilot class and the traditional classroom class combining the data statistics and student survey questionnaires. Summarize the experience of the English curriculum reform of engineering majors based on the "hidden curriculum" to facilitate the exchange and promotion of experience.

4. Summary

In this study, the basic theory of "hidden curriculum" is summarized and the deficiencies of the four development aspects is pointed out. Furthermore, the construction strategies of "hidden curriculum" for SBE in engineering subjects are put forward by means of theoretical analysis, classroom design and index evaluation. The main contents are listed as follows:

(1) Define the explicit and tacit knowledge in the course and study the effect mechanism of the tacit knowledge on teaching.

(2) Constitute the construction scheme with priorities of "hidden curriculum" based on the basic principles proposed in this thesis. After the construction of "hidden curriculum" scheme, the integrated teaching program can be obtained.

(3) Select two pilot classes to perform the "hidden curriculum". Analysis the results compared with the normal class and make improvements. Finally, summarize the experience of the English curriculum reform of engineering majors based on the "hidden curriculum".

The strategies in this paper can be tested by designing actual "hidden curriculum" and the improvement plan of the strategy should have an in-depth discuss for future research.

Acknowledgement

On the one hand, Xi-Qiu Zhang thanks her former supervisor, Professor Qi-Yao Sun, a respectable, responsible and resourceful scholar, who has provided with valuable guidance for this manuscript. On the other hand, Chang-Li Yu thanks his intelligent student, Shuo Yang, for her kindness and help. This research was financially supported by the Postgraduate Supervisor Ability Improvement Funds of Shandong Province (Grant NO.SDY18200), and the Teaching Reform Funds of Shandong Jiaotong University (Grant NO. JG201731).

References

- [1] K.F. Li, Construction of hidden curriculum in college English, *Theory Research*, vol. 26, pp. 147-148, 2011.
- [2] Z. Q. Wang, Pragmatic competence between explicit knowledge and tacit knowledge, *Journal of Hubei Correspondence University*, vol. 27(04), pp.169-170, 2014.
- [3] H. Sun, A Brief Analysis of the Implicit Classroom from the Perspective of Self-media: Taking the Reform of Foreign Literature Teaching as an Example, *Heilongjiang Education (Higher Education Research & Appraisal)*, vol. 04, pp. 35-36, 2015.

- [4] L. Zhou, The Design and Application of Hidden Curriculum in English Teaching, *The guide of Science & Education*, vol. 05, pp. 138-139, 2017
- [5] J.C. Borges, T.C. Ferreira, M.S.B. Oilverira, N. Macini and A.C.F. Caldana. Hidden curriculum in student organizations: Learning, practice, Socialization and responsible management in a business school, *The International Journal of Management Education*, vol. 15(2, part B), pp. 153-161, 2017
- [6] L. McKenna, B. Williams. The hidden curriculum in near-peer learning: An exploratory qualitative study, *Nurse Education Today*, vol. 50, pp. 77-81, 2017.
- [7] M. X. Zhang, Lu Wang, Design and Practice of Implicit Course in Teachers' Online Practice Community, *China Educational Technology*, vol 12, pp. 113-119+135, 2018.