Research on Application of Collaborative Knowledge Building in Blended Language Classroom Teaching

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Abstract. In language teaching, collaborative knowledge building (CKB) can be used to strengthen students' participation, communication, cooperation and viewpoint-sharing and as a result, improve students' academic achievements and their leaning abilities as well. This paper analyzes how to use CKB to organize language classroom teaching and studies the effects of CKB-based teaching in a blended language classroom. The results indicate that the application of CKB in blended language classroom teaching is feasible, operable and effective. CKB-based teaching can improve students' ability to use language and their comprehensive quality, especially when enough time, relevant training and various supports and encouragements provided. But the more successful application of CKB-based teaching will be based on further research concerning teachers' intervention, teaching resources, gender differences, and evaluation methods etc.

Keywords: Knowledge building, Collaborative learning, Blended learning, Language classroom teaching.

1 Introduction

In the 21st century, the educational field has confronted the unprecedented opportunities and challenges because of the world multi-polarization and economic globalization, the rapid progress of science and technology and the increasingly fierce competition. In order to meet the needs of the society, various reform measures have been taken in foreign language education in China, such as to discuss foreign language teaching from the perspective of ecological linguistics [1], to reform the foreign language teaching based on cooperative learning [2], and to promote the foreign language teaching by using CALL [3] to name just a few.

But in Chinese language classroom, as the result of deep influence and restrictions of traditional education thoughts and ideas, the teacher-centered instruction ,the exam-oriented education and the grammar-translation method are still flooding[4]; the teaching model is still outmoded and single [5], and "teaching" is stressed heavily while "learning" is ignored [6]. Consequently, what students learned is incomplete,

inert and rigid [7], and cannot be used in daily life effectively and flexibly. Therefore, to reform the traditional educational thoughts and ideas is significant to change the current status of Chinese foreign language teaching.

In fact, many new thoughts and ideas, such as constructivism teaching, situated learning, corpus linguistics and so on, have already played important roles in promoting the reform in foreign language teaching. Among them, the Knowledge Building (KB) has been attached great importance to.

According to Scardamalia and Bereiters, KB is "the production and continual improvement of ideas of value to a community, through means that increase the likelihood that what the community accomplishes will be greater than the sum of individual contributions and part of broader cultural efforts" [8]. In the process of KB, new knowledge cannot be simply assimilated or accommodated under the help of a more knowledgeable person but through mutual collaboration, in which participants engage in problem solving or inquiry activities to improve individual understanding and public community knowledge in a specific domain[9].

Collaborative Knowledge Building (CKB) focuses more on collaboration and shared understanding among group members. In this process, individuals contribute to the group and gain help from other group members .In CKB, the important ways for learners to build knowledge is through discussion, reflection and shared understanding. So in CKB-based language learning, the language study, which is more compatible with cognitive principles of language acquisition, will be more efficient.

Actually, some research work related to CKB and language teaching and learning has already been carried out. For instance, Chen has analyzed how to use network-based resources in English teaching from the perspective of CKB [10]. Cheung studied how the undergraduate paraphrased sentences by using CKB and classified the forms of paraphrasing [11]. The literature study has showed that not many efforts have been given to the application of CKB in language teaching and learning esp. in classroom teaching, even though CKB could be successfully employed in this field.

In order to further promote the application of CKB in language teaching, this study concentrates on how to use CKB to organize language classroom teaching and studies the effects of CKB-based teaching on students and teachers in a blended language classroom.

2   Methodology

2.1   Participants and the Course

Altogether 59 undergraduates at School of Foreign Languages, Guangdong Polytechnic Normal University, participate in this study. Among them, there are 2 boys and 57 girls. Class A (1 boy, 29 girls) take part in the whole journey, while class B (1 boy, 26 girls) begin to be involved in the study one term later.

The course entitled *Contemporary English* has been selected for the application of CKB-based teaching. It is a required course to develop the comprehensive language abilities of English majors, and generally, the traditional teaching method has been employed in this course. Moreover, according to the arrangement of the curriculum, this course lasts four semesters with average 5-6 periods in a week. Therefore, the comparative study between the traditional language teaching and CKB-based teaching can be fully conducted, and the study time can be also guaranteed.

2.2   Research Design

In order to realize CKB in foreign language classroom systematically, we propose a CKB model for language classroom teaching based on the previous researches and features of language learning, esp. on the reference of Stahl's KB model in 2004 (see Fig.1.) [12].
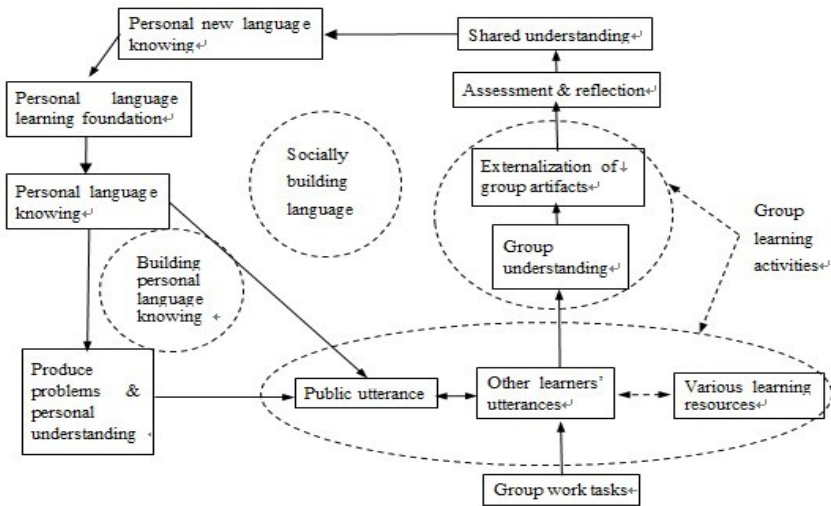

Fig. 1. CKB Language Classroom Teaching Model

This model, which is a cycle without beginning and ending, proposes a general method to organize CKB in a foreign language classroom, mainly covering the language learning foundation of language learners, organization of group study, design of CKB activities, externalization of group artifacts, assessment and reflection etc.

What's more, a blended learning environment with the combination of face-to-face learning and online learning has been provided. Online learning, basically realized through modern information means, such as E-mail, SMS, QQ group discussion, has

served as an important supplementary and extending part of classroom learning. Through online learning, students can interact with each other without time limit and space limit, which can greatly facilitate their knowledge construction.

2.3   Research Methods

In order to analyze the feasibility and effects of the CKB model, action research has been used in the study. Action research is a spiral process, and each developmental cycle includes four phases, namely plan, action, observation and reflection (Kemmis & McTaggart, 1988). What's more, the questionnaire, interview, teaching journal, reflection report and test are the specific operation methods employed to study different contends in the process of the implementation of the CKB model. As to the data collected in the study, SPSS is used to analyze the quantitative data, while Nvivo is used to deal with the qualitative data.

3   Findings

Compared to the traditional teaching method, CKB-based teaching is a quite new phenomenon in foreign language teaching. After a 2-year study, CKB-based teaching is starting to have positive effects, and the main findings are as follows:

3.1   Learners' Understanding and Attitudes Towards CKB-Based Teaching

The ultimate goal of teaching is to promote students' progress and development. As a new teaching approach, whether it can be recognized and accepted is the prerequisite for the smooth implementation of CKB-based teaching. The results of data analysis of questionnaire and interview manifest that it is the first time for 93.3% students to be involved in CKB-based teaching, but after experiencing, 80% students show that they can accept CKB-based teaching and engage in it actively, and 16.7% students find it difficult for them to follow for they are unfamiliar with it. In addition, 70% students like CKB-based teaching and 23.3% dislike. 80% students have already formed positive attitudes towards CKB-based teaching and shown their willingness to continue to use it.

   Meanwhile, research shows that students have been obviously affected by CKB-based teaching in one way or another, especially students' understanding of the nature of language teaching and learning.

Learners' Understanding of the Nature of Learning. In CKB-based teaching, knowledge is not static and learners have to construct them initiatively. Actually, CKB-based teaching impels learners to reflect, to compare, and gradually realize learning is a self-disciplined and self-managed process. The data reveal that learners understanding of the nature of learning; learners' roles, learning effectiveness have been greatly affected by CKB-based teaching (See Table1).

Table 1. Learners' Understanding of the Nature of Learning

	Learners' Understandings	Examples for Analysis
Nature of Learning	the process of knowledge construction by learners	"In the past I was forced to learn but now I want to know more and to learn more. I have more chances to communicate , to discuss and to think, and I learn through problem solving."
Learners' Roles	participants, contributors, constructors, actors	"I think I have become lazier because of being passive learners, but now I have to be engaged in study, to analyze, to solve my own problems and my classmates' problems as well, and I begin to realize I have to undertake my own learning and I am the owner of my study."
Learning Effectiveness	to gain knowledge and skills, and cultivate various competence	"I feel curious and I am interested in it, and I want to express, to discuss, to share, I think my abilities to manage, to cooperate improved a lot."

Learners' Understanding of the Nature of Teaching. For the differences between CKB-based teaching and the teacher- centered teaching, 96.67% learners admitted that they began to think about what language teaching should be. CKB-based teaching has affected learners understandings about language teaching, esp. in the aspects of teachers' roles, teaching objectives, teaching activities, teaching environment etc. (see Table 2).

Table 2. Learners' Understanding of the Nature of Teaching

	Learners' Understandings	Examples for Analysis
Nature of Teaching	learner-centered teaching	"In the past, we were just passive learners; but now we have more chances to talk with each other and study at our own pace, and we are starting to become the owner of our study."
Teachers' Roles	facilitators, guiders, providers, lecturers	" In many cases, students take up much time In class to discuss or share, while the teachers help us to solve problems and difficulties we cannot solve."
		"Teachers provide us with many learning materials and recourses through QQ group and e-mail."

Table 2. (*Continued*)

	Learners' Understandings	Examples for Analysis
Teaching Objectives	to cultivate students into an independent and self-disciplined persons	"We have to prepare well before we have classes , if we are lazy, we learn nothing in class. We are forced to think, to communicate."
Teaching Activities	activities designed to help students engage in learning	"In the past, what we have to do in class is to listen and take notes, but now we have to solve the problems by ourselves first and we communicate, negotiate, share a lot in class and we have become more open-minded and flexible."
Teaching Environments	to create supportive and constructive learning environments for learners	"In the past, most of our study took place in the classroom, but now it seems that we learn everywhere. We can read materials and information shared by the teacher and our classmates in QQ group, and we can discuss in QQ group, and get help from others quickly, which is very convenient."

3.2   Learners' Understanding and Attitudes Towards Group study

CKB, as a collaborative and purposeful activity [13], emphasizes learners construct knowledge collaboratively [14], so group study becomes the basic form of CKB-based teaching. In group, learners work collaboratively to create, optimize and improve knowledge as community members. Learners' understanding and attitudes towards group study have direct effects on CKB-based teaching.

In fact, most students had group study experience. But it is discouraging that just because of their past experience, many students don't like group study, and think group study is inefficient. But after one-year's group study experience in CKB-based teaching, 48.3% students hold positive attitudes towards group study, 3.4% negative, and 48.3% students have been changing their attitudes from the negative at first to the positive at present, as is evident in the following students' comments.

Student A: I had group study experience, when I was a secondary school student. But, till now, I think I have benefited much from it, for the interaction between the teacher and students are really working well.

Students B: I didn't like group learning at all when it was introduced in our class last year. I didn't think it could be helpful, and actually I regarded it as a waste of time. Now I have recognized that I studied in a passive way and depended too much on the

teacher. I am seldom involved in learning completely. Now, I have learned how to engage in group study, especially in the process of group knowledge building. My group mates are all very active and the learning environment is very comfortable. I must say that now we have truly participated in learning.

In the following, four aspects have been generalized to demonstrate students' understanding and attitudes towards group study based on the analysis of reflective journals of 29 students.

Group Study Interest. Group study interest refers to the learners' lasting psychological tendency to group study. CKB group study, which can arouse learners' interests and zeal for study for its novelty and attraction, leads to learners' willingness to participate in it actively. Student C once mentioned that: "Group study is a fresh and interesting thing for us who are used to traditional rigid teaching mode. Our learning interest and passion can be easily aroused. Because of group study, classroom was not controlled only by the teacher, we the students act as cooperators now. Above all, we have more chances to speak English. That is the power of our study."

Group Participation. Group participation is essential for successful group study, and it means the manners of the learners' psychological activities and the efforts of the learners' behaviors, covering behavioral, cognitive and emotional participation. Students have realized that participation is the key to successful group study, and it is also on behalf of a sense of responsibility. In addition, good preparation before class is an important guarantee for real and complete participation in group study.

Group Study Skills. Study indicates that it is quite necessary for learners to know how to use different group study skills flexibly in group study. Learners have already realized that the very skills, such as how to provide effective leadership, decision-making, trust-building, communication, and conflict-management, and be motivated to use the prerequisite skills and so on are necessary to promote effective group study [15]. The following comments are some typical examples.

Student E: I am always the first one to speak in my group, and often use 'Any question?' to arouse my group members to speak. I think the biggest challenge in group study is to express myself clearly in English. And I find that to read more, to remember more and to express myself slowly can help me a lot.

Student F: I think everyone should know his commitment clearly in group study, and then the group study will become more disciplined and effective. I will listen to others attentively and patiently, for this will help me to understand what other students think, what the difference is between their understandings and mine, and what I can learn from others.

Group Cooperative Learning. Different from individual study, group cooperative learning refers to the group members who share common interest work together to solve problems and realize achievements through communication, negotiation and

sharing. Students conclude that they benefit greatly from group study for they can share and exchange opinions, get hints, encouragement, feedback, resources freely and immediately, as is shown in the reflection of Student H.

Student H: Group learning offers me a platform for knowing other's thinking. I really knew the power of collaboration from our group learning. One person's energy is so imitated. Sometime a simple problem may puzzle me for a long time. However, my group mate could give me a little reminding for helping me get out the difficult situation, and it is really impressive to me.

3.3   Design of CKB Language Teaching Activities

CKB-based teaching focuses on the knowledge construction of students in the process of participation, communication and cooperation in the process of knowledge construction. So the activities involved in CKB-based teaching are different from those in lecture-based teaching. The basic principle to design CKB-based teaching activities is to provide students opportunities to build both public and individual knowledge through flexible participation, communication and cooperation. In the study, a basic process of CKB-based language teaching activities has been formed to help teachers to design and organize various CKB-based activities according to students' real needs and teaching goals, such as theme-based discussion, problem solving activities, role play and so on (see Fig. 2.). Next, a chosen case will be used to illustrate the specific operations of the basic process and its effects as well.
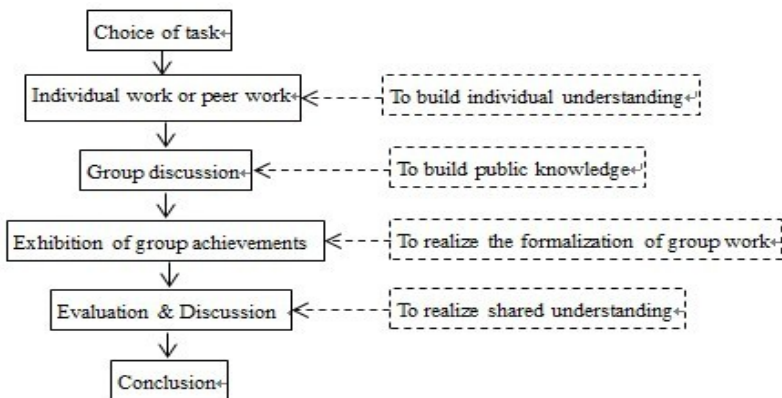

Fig. 2. Basic Process of CKB-based Teaching Activities

A Case: Problem-Based Text Understanding. In *Contemporary English* teaching, to understand, analyze and appreciate the selected texts is quite important. Different from the transfer instruction, in CKB-based teaching, students complete the teaching

goals by means of problem solving or task-based activities. Teachers mainly act as guiders and facilitators. The operation steps are as follows:

Individual study: Based on self-study, an individual problem list is formed before class according to the student's understanding of the text.

Group discussion: In class, students work in a 4-person group to solve the problems posted by group members through discussion and negotiation. After that, a group problem list can be produced for the unsolved problems in group discussion.

Achievements sharing: Each group pastes their group problem list in the public discussion area in class and invites the whole class to solve the remaining problems together.

Evaluation & Reflection: The teacher evaluates both individual study and group study, and deals with the difficulties and the problems ignored by the students.

Problem-Based Text Understanding, which combines individual study and group study, pays attention to differences among students, helps students to build trust, mutual relationship, and arouses the students' learning enthusiasm and initiative, can promote CKB effectively in language class. Fig. 3 and Fig. 4 are two specific examples representing "group discussion" and "achievements sharing" perceptively in *Problem-Based Text Understanding*. The selected text is Mandela's Garden in *modern university English*. Fig. 3 is the group study problems list emerging from group discussion, and Fig. 4 is results of group study problems list after the whole class discussion and negotiation.
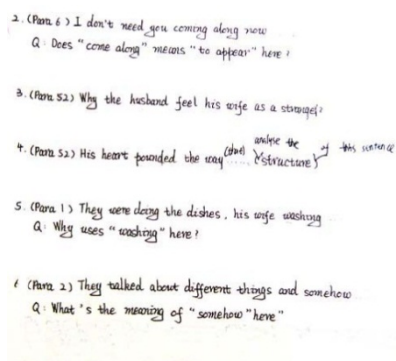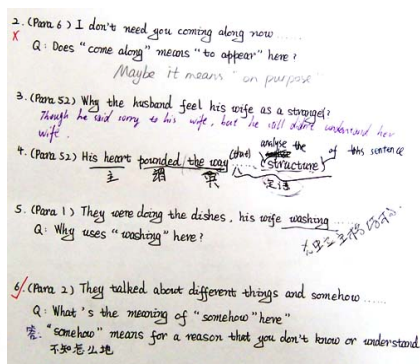

Fig. 3.   **Fig. 4.**

4   Discussion of Findings

4.1   CKB-Based Language Classroom Teaching Is Feasible and Operable

Research shows that, through participating and experiencing, CKB-based teaching has gained most participants' recognition and acceptance. Learners' positive and affirmative attitudes towards CKB-based teaching and group work suggest that the application of CKB in language teaching is feasible. Moreover, most learners have expressed their confidence in and expectations to the bright future of CKB-based teaching and hope that they can continue to use it. Additionally, the basic process of CKB-based teaching activities provides specific steps to design CKB activities and ensure the effective implementation of CKB-based teaching.

4.2   CKB Teaching can Improve Students' Ability to Use Language and Their Comprehensive Quality

The research states that CKB-based teaching is effective, which can not only changes students' understandings of the nature of language teaching and learning, but also helps students to develop new learning behaviors. Based on the research on students' understanding and attitudes towards group study, that many students' attitudes have gradually changed from the negative to the positive   partially shows that CKB-based teaching can meet the learning needs of the students effectively, and win their recognition.

CKB teaching, emphasizing students' participation, communication, cooperation and sharing, has impelled students to explore, reflect and express. Students "learn language through doing", which exactly reflects the original way of language learning.

Owing to CKB teaching, gradually students are equipped with the consciousness, courage and confidence to speak English, and more and more students can look for, even create opportunities to training themselves, such as practicing oral English together with classmates, and organizing English corner regularly, join in drama performance. Students have better self-management consciousness, and more time and efforts have been devoted to language study, and students' academic achievements and the ability to use language have been improved. In 2010, the first pass-rate of Test for English Majors Band 4 of students participating CKB teaching was 86.44%, 30% higher than that of the whole country, partially owns to the CKB teaching.

4.3   Blended Learning Environment has Provided Powerful Guarantee of the Smooth Implementation of CKB-Based Teaching

Since CKB-based teaching stresses students' participation and communication, through online learning, students can interact with each other anytime and anywhere, which greatly expands the interaction among students and provides enough opportunities for students to conduct CKB. Moreover, the needs of individual student can also be satisfied owing to the timely help and feedback from companions or teachers

esp. when they work on the assigned tasks. Therefore, CKB-based teaching is more effective in a blended learning environment.

5   Conclusions

To apply CKB in foreign language teaching provides a new perspective in the reform in language teaching, for CKB-based teaching can activate classroom atmosphere, arouses students' enthusiasm and motivation for learning, improve students' ability to use language, develop students' thinking. Though CKB-based teaching is promising, the application of this new mode of language teaching needs enough time, relevant training, patience and perseverance, and various supports and encouragements. For example, CKB-based teaching makes teachers confronted with great pressure and challenges, and teachers need to continuously develop new teaching strategies create environments and design activities to support and courage students to construct knowledge. So the more successful application of CKB-based teaching will be based on further research concerning teachers' intervention, teaching resources, gender differences, and evaluation methods etc.

References

 1. Yinmei, S.: Foreign Language Teaching in Ecological linguistics perspective. J. HNU 74–76 (2008)
 2. Chunxia, B.: The Organization of Collaborative Learning in Foreign Language. Education Review, 66–68 (2005)
 3. Wen, K., Qinghua, L.: Language Teaching and Computer Assisted Language Teaching. In: CAFLEC, pp. 34–38 (2002)
 4. Dingfang, S.: FLT in China: Problems and Suggested Solutions. Shanghai Foreign Language Education Press, Shanghai (2004)
 5. Gang, J.: The Current Status and Advancing Policies for College English Teaching. J. CQUT, 165–167 (2007)
 6. Xiao, Z.: Changing College English Teaching Beliefs for Building Student-Centered Self-learning System. J. LYU, 114–116 (2005)
 7. Gabrys, G., Weiner, A., Lesgold, A.: Learning by Problem Solving in a Coached Apprenticeship System. In: Rabinnowitz, M. (ed.) Cognitive Science Foundations of Instruction. Lawrence Erlbaum Associates, Mahwah (1993)
 8. Scardamalia, M., Bereiter, C.: Knowledge Building. In: Encyclopedia of Education, 2nd edn. Macmillan Reference, USA (2003)
 9. Jianhua, Z.: Computer Supported Collaborative Learning. Shanghai Education Press, Shanghai (2006)
10. Chen, Y.: Foreign Language Learning Based on Knowledge Building Pedagogy and Web-resources. US-China Foreign Language 6(3), 22–32 (2008)
11. Cheung, L.: Collaborative Knowledge Building through the Lens of Paraphrasing. In: Chen, B., So, H.J. (eds.) ICCE 2008. Workshop Proceedings, pp. 70–79 (2008)
12. Yinjian, J.: Research on Organizing Method of Collaborative Knowledge Building in Foreign Language Classroom. Shandong Foreign Language Teaching Journal, 31–36 (2009)

13. Law, N., Wong, E.: Developmental Trajectory in Knowledge Building: An Investigation. In: Wason, B., Ludvigsen, S., Hoppe, U. (eds.) Designing for Changing in Networked Learning Environments. Kluwer Academic Publishers, London (2003)
14. Mclean, R.S.: Meta-communication Widgets for Knowledge Building in Distance Education. In: Hoadley, C., Roschelle, J. (eds.) CSCL 1999, Lawrence Erlbaum Associates, Mahwah (1999)
15. Johnson, D.W., Johnson, R.T., Holubec, E.J.: Advanced Cooperative Learning, 3rd edn. Interaction Book Company, Edina (1998)