

An Empirical Study of Internet-Based Collaborative Learning

Yu Fengjun^{1,2+} and Tao Yuan²

¹ School of Foreign Languages

Dalian University of Technology/Xinjiang University of Finance & Economics
Dalian, China/Urumqi, China

² School of Foreign Languages Dalian University of Technology, Dalian, China

Abstract. Internet-based collaborative learning is a great aid to the language learning and has been a primary form of Web-supported instruction, but because of the complex online learning environment, it is not easy for the teachers to design and organize a highly effective Internet-based collaborative learning model. The empirical study in this paper aims to explore the effective and efficient process of carrying out the Internet-based collaborative learning. It is suggested that the whole process be divided into four phases and the four phases of the process be regularly evaluated to help the teachers to find the problems and accordingly perfected to help the students to achieve satisfying study effects.

Keywords: Internet-based collaborative learning, Model, Problems, Solutions

1. Introduction

In the past decade, with the development of information technology, the new technical media such as interactive television, virtual classroom, video conference have become an important part in e-learning, which is called Web-supported Learning (WSL). The application of internet technology in teaching has been changing all of the traditional teaching concepts and teaching modes. And a lot of researches have been done on the Internet-based collaborative learning (IBCL). It is believed that the Internet-based collaborative learning helps promote the learners' learning interest and the development of their advanced cognitive competence. It has been a primary aid to the language learning and teaching in many universities in China. But in the practice of the Internet-based collaborative learning, there still exist some problems and both learners and teachers are faced with some new challenges. This paper aims to analyze the problems and challenges and tentatively put forward some solutions with an empirical study.

2. Literature Review

Engaging students in active learning is a predominant theme in today's classrooms. To promote active learning, teachers across the disciplines and in all kinds of colleges are incorporating collaborative learning (CL) into their teaching.

Collaborative learning, a kind of instructional theory and strategy, first sprang up in the early 70s of the 20th century in America and had made substantial achievements during the following 15 years. Now, collaborative learning has been widely adopted in schools in a large number of countries such as America, the Great Britain, Canada, Australia, Germany, Netherland and Japan. It is a proven strategy that plays a positive role in promoting the students' learning interest, improving the social-psychological atmosphere of the classrooms, enhancing the students' academic performance and facilitating the students' advanced cognitive competence.

⁺ Corresponding author. Tel.: + 13942006996.
E-mail address: yfjdl@163.com.

Collaborative learning is a situation in which two or more people learn or attempt to learn something together. Unlike individual learning, people engaged in collaborative learning capitalize on one another's resources and skills (asking one another for information, evaluating one another's ideas, monitoring one another's work, etc.). To be put in another way, collaborative learning is based on the model that knowledge can be created within a population where members actively interact by sharing experiences and take on asymmetry roles. To be put differently, collaborative learning refers to methodologies and environments in which learners engage in a common task where each individual depends on and is accountable to each other. These include both face-to-face conversations and computer discussions (online forums, chat rooms, etc.).

The Internet-based collaborative learning can be seen as a kind of collaborative learning aided and supported by multimedia and internet technology. Multimedia can provide an interactive learning environment with friendly interfaces and intuitive images; the network technology can not only provide the information transmission channel among learners but also break through the space and time limit and organize and manage the discipline knowledge as well as various teaching information in the way of hypertexts and hyperlinks. The Internet-based collaborative learning is more suitable for research learning and problem solving learning.

3. An Empirical Study

In the light of the collaborative learning instructional theory and strategy, we experimented on 67 freshmen of two College English classes, aiming to find the problems that the students have with the Internet-based collaborative learning, testify the fruits and efficiency of IBCL, help students improve their IBCL method and what's more important, offer some advice to teachers when they are engaged in IBCL study.

In our experiment, the IBCL process can be divided into 4 phases: preparation, implementation, evaluation, perfection of each of the previous 3 phases (see figure 1). Ideally, this process should be a circle without ending, but in this experiment, we only carried out the process twice.

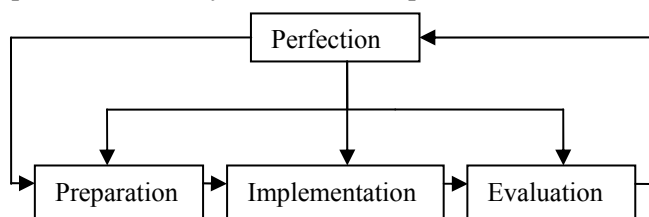


Fig. 1: The process of IBCL experiment.

3.1. Preparation Phase

With regard to the students' needs and the objectives of the College English course, we first design the IBCL teaching plan (see table 1).

Table. 1: IBCL teaching plan.

Students and their characteristics and needs	<ol style="list-style-type: none"> 1. The students are freshmen majored in International Trade. 2. The students have basic computer skills but have no IBCL experience. 3. The students have strong motives for learning English well.
The objectives of IBCL of College English	<ol style="list-style-type: none"> 1. The students master the required language skills of the course. 2. The students can learn how to collaborate. 3. The students can learn how to study with the aid of the Internet. 4. The students can improve their learning strategies.
The supports for IBCL	<ol style="list-style-type: none"> 1. The students have free access to the online College English learning system in the university computer rooms. 2. The students are available to the timely information about the course, such as notices, assignments and activities. 3. The students can pose questions online and their questions will be timely answered by the teacher. 4. The students can have the collaborative team work such as group discussion and chat online.
Evaluation	<ol style="list-style-type: none"> 1. Written test: 40%; Students' performance of IBCL: 60%. 2. Students' performance of IBCL consists of peer evaluation, self-evaluation and teacher evaluation.

3.2. Implementation Phase

The 67 students in two College English classes are divided into several groups with 5 or 6 students in one group. The students will regularly get the Activity/Task notice online and are supposed to carry out the Activity/Task collaboratively within the group with the help of the teacher if necessary. During the process of IBCL, the teacher can have face-to-face communications when necessary, answering their inquiries and giving them feedback. Students-students and students-the teacher can also communicate with each other via email and QQ group.

3.3. Evaluation Phase

The formative assessment of the effects of the IBCL of College English was carried out a month later after the implementation phase, aiming to find the problems that the students have, timely solve the problems and perfect the whole process. The evaluation is based on a questionnaire, the teacher's observations and records of the process and the informal talks with the students. Since the success of IBCL depends largely on communication ability, sense of belonging and sense of supporting/being supported, the questionnaire mainly involves the following aspects: students' attitudes toward IBCL, the extent of communication between the teacher and students and among students, the interpersonal relationship among the team players, the degree of satisfaction of the supports from the group peers and the teacher. The questionnaire was designed according to the 5-point Likert scale. Each item in the questionnaire is measured from "Strongly disagree" (-2) to "Disagree" (-1) to "Neither agree nor disagree" (0) to "Agree" (1) to "Strongly agree" (2). The teacher's observations and records are around the students' online learning behaviours and the collaborative group work. The informal talks focus on the problems and ideas the students may have in the process of IBCL. The 10 statements in the questionnaire are as follows.

- S1. I like the traditional teaching mode better.
- S2. I like the combination of IBCL and the traditional teaching mode.
- S3. I feel kind of anxious about IBCL.
- S4. I feel it easy for us to collect the relevant information to finish the assigned tasks.
- S5. I feel the relationship among the group peers is harmonious.
- S6. I feel the discussions within the group are fruitful.
- S7. Instead of having one's own critical ideas in discussion, most students just cite the experts' opinions.
- S8. The teacher should offer more supports and give timely feedbacks to the students.
- S9. The teacher should have more effective supervision over the students' group work.
- S10. On the whole, the IBCL mode is a good try.

Table. 2: The statistical results of the questionnaire.

Statement	Option result (%)				
	-2	-1	0	1	2
S1	6.0	16.4	19.4	25.4	32.8
S2	13.4	11.9	26.9	25.4	22.4
S3	9.0	16.4	23.9	25.4	25.4
S4	20.9	32.8	23.9	13.4	9.0
S5	25.4	26.9	17.9	16.4	13.4
S6	23.9	26.9	17.9	16.4	14.9
S7	7.5	17.9	23.9	25.4	25.4
S8	11.9	19.4	13.4	28.4	26.9
S9	6.0	14.9	19.4	28.4	31.3
S10	16.4	22.4	28.4	19.4	13.4

Analyzing the results, we knew the students' attitudes towards IBCL, what problems students had with IBCL and accordingly what solutions we should come up with to perfect the process (see table 3).

Table 3: Problems with IBCL and solutions to perfect the process.

Type of problem	Problem	Solution
Attitude	1. Students' being not used to IBCL, with 47.8% of students supporting the idea of the combination of IBCL and the traditional teaching mode and 50.8% of students feeling anxious about IBCL.	1. Cultivate the students' habits and abilities to work independently and collaboratively as adult learners.
Strategy	2. Students' lack of the skills of searching, sorting, processing, managing and communicating the valuable online resources (53.7% of students).	2. Help the students realize that the resources available to them online are not necessarily the information they need and are not the knowledge they are supposed to acquire.
Team work	3. No active participation in the group work. Insufficient communication within the group (51.8% of students). 4. Relatively poor team cohesion (52.3% of students).	3. Specify topics for group discussion. Students' performance is evaluated according to their contribution to the discussion. 4. Introduce students some online communication etiquette. 5. Students will be the team leader in turn to learn to collaborate with the others.
Learning support	5. Not enough support from both the teacher and the peers.	6. Increase the frequency of face-to-face communications between the teacher and students. 7. Offer timely feedback and guidance on students' group work.
Critical thinking	6. Students' weak critical thinking ability: not good at drawing conclusions and reflecting.	8. Participate in students' discussions regularly and guide them how to think critically.

3.4. Perfection Phase

At this phase, we perfected the previous three stages by solving the problems we had found through the questionnaire, the teacher's observations and the teacher's informal talks with the students (see table 3).

3.5. Second Round of the Evaluation of IBCL

As mentioned before, the process consisting of four phases of IBCL should be a circle without ending. We started the second round of the process immediately after the perfection phase. And after the whole semester, we evaluated the process for the second time by conducting another questionnaire whose content is the same as that of the first one in order to compare the data from the two questionnaires to see the effects of IBCL after the improvements (see table 4).

Table 4: The statistic results of the 2nd questionnaire.

Statement	Option result (%)				
	-2	-1	0	1	-2
S1	13.4	29.9	31.3	22.4	3.0
S2	20.9	28.4	23.9	14.9	11.9
S3	29.9	23.9	17.9	16.4	11.9
S4	13.4	19.4	22.4	23.9	20.9
S5	9.0	14.9	16.4	32.8	26.9
S6	11.9	13.4	22.4	26.9	25.4
S7	19.4	22.4	17.9	20.9	19.4
S8	17.9	31.3	19.4	16.4	14.9
S9	19.4	28.4	22.4	14.9	14.9
S10	6.0	17.9	20.9	25.4	29.9

Table 5 shows us that after the improvements of the process students have improved dramatically in their attitudes toward IBCL, IBCL strategies and IBCL team work. And the students are also more satisfied with the supports they gain from the teacher, but students' critical thinking still needs to be enhanced. On the whole, a majority of students think that the IBCL model is a good try to help them learn.

Table. 5: Comparison of IBCL effects (*p < 0.01, ** p < 0.05).

Statement	Sum of Negative Ranks	Sum of Positive Ranks	Z Statistics	P Value
S1	1155.00	171.00	-4.723	0.000*
S2	849.00	232.00	-3.452	0.001*
S3	1083.00	243.00	-3.996	0.000*
S4	560.50	1330.50	-2.828	0.005*
S5	351.50	1244.50	-3.700	0.000*
S6	405.00	1026.00	-2.777	0.005*
S7	875.00	450.50	-2.024	0.043**
S8	624.00	196.00	-2.912	0.004*
S9	857.50	132.50	-4.285	0.000*
S10	438.00	1047.00	-2.662	0.008*

We also turn to Non-parametric Wilcoxon Rank Test to compare the results of two questionnaires to see the effects of IBCL. It is shown in Table 5 that all the P value except that of S7 is less than 0.01, which means that compared with the other items in the questionnaires, the significance of S7 is weaker and the second round of IBCL process didn't make many improvements on the students' ability of critical thinking and we still need to improve and perfect the process to develop students' critical thinking, but we can still conclude that students are gradually used to the IBCL model and improving their strategies and skills of learning online.

4. Conclusion

This study explored the process of IBCL. It found that students are faced with some problems in the process of IBCL and suggested that the four phases of the process should be regularly evaluated to help the teacher to find the problems and accordingly perfected to help the students to achieve satisfying study effects.

Despite careful planning, this empirical study still has limitations. First of all, the effects of IBCL can be affected by many variables. In this paper, we only focus on the ones that we can control. Secondly, the sample size (67 students) is small. Further studies need a larger sample. Also, we only carried out the process of IBCL twice within one semester. The more frequently we carried out the whole process the more convincing the results will be.

5. References

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