

# Research on Improving the Effectiveness of Group Collaborative Learning

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**Abstract.** Collaborative learning is a kind of social activity of collaborative knowledge building. In the current reform of classroom teaching in Colleges and Universities, college students' collaborative learning effect is not high. Through the questionnaire survey and the analysis of collaborative learning cognitive concepts, characteristics of the collaborative process, the emotional expression and evaluation of coordination effect, the existing collaborative learning model can't effectively stimulate and maintain the enthusiasm of learners to participate in collaborative learning. Based on this, combining with characteristics of ARCS model effectively mobilize and sustain the students' learning motivation, the researchers reconstruct the mode of classroom group collaborative learning in order to improve the effectiveness of collaborative learning.

**Keywords:** Group Collaborative Learning; Effectiveness.

## 1. Introduction

The 2017 New Media Alliance Horizon Report (Higher Education Edition) pointed out that Cooperative learning will be used as a technology to promote higher education in the next 1-2 years. Different from cooperative learning, collaborative learning is a collaborative social activity of knowledge construction. Based on real problem-solving environment, it provides favorable training for innovative talents with teamwork spirit in higher education in an open information environment. Collaborative learning emphasizes the participation of each member in the team. The core issue is joint negotiation and sharing. The social nature of collaborative learning is the main difference between it and the cooperative learning model [1]. Cooperative learning occurs because individuals complete their studies, and individual results are integrated into the results of the group, emphasizing the results of joint work [2].

From the perspective of the application of collaborative learning at the current stage of university teaching, there are many unsatisfactory places. How to promote the effectiveness of group collaborative learning and play the role of collaborative learning in improving the information literacy and innovation ability of college students is the core issue of this paper. On this basis, this study combines the ARCS motivational incentive model to reconstruct the classroom group collaborative learning model. The ARCS model consists of four elements that are not only progressive but also relevant: Attention, Relevance, Confidence, and Satisfaction, in addition to focusing on how to stimulate learners' motivation to learn, pay more attention to how to maintain the motivation of learners [3]. The organic integration of group collaboration learning and ARCS model enables classroom content to quickly gain students' attention, allowing learners to experience the relevance of their goals and teaching content, stimulate self-confidence and obtain satisfaction with their own learning, and maximize classroom content. The degree of migration has important enlightenment value for the research and application of classroom group collaborative learning mode [4].

## 2. Improvement Strategy based on ARCS

Through interviews with college teachers and access to relevant literature, it can be clearly seen that the application of the group collaborative learning mode in college classrooms at this stage has not received the desired results. The reason is that the first is the unreasonable mode of cooperation, and the second is because students are not very motivated to learn. How to fully mobilize and maintain learning motivation in classroom group collaborative learning activities is the key to improving their effectiveness. On this basis, the researchers combined with the ARCS model to give a concrete and

feasible improvement system, in order to help improve the effectiveness of group collaborative learning.

In order to achieve the deep integration of ARCS motivational incentive model and group collaborative learning, the researchers divided the classroom group collaboration activities into three phases: preparation, implementation and evaluation phases, and proposed classroom group collaborative learning activities for each phase of the specific process.

**2.1 Activity Preparation Stage**

**Identify Collaboration Topics:** In the preparation stage of collaborative activities, it is first necessary to clarify the theme of collaborative development. Drawing on the criteria proposed by Professor Sylvia C. Chard of the University of Alberta, combined with ARCS, the researchers further summarized the criteria for collaborative themes: collaborative themes are taken from the knowledge required by the syllabus while paying attention to extracurricular knowledge. Organic integration; collaborative themes need to be based on the learners' existing skills and knowledge, and pay attention to their relevance to new knowledge; collaborative themes must be valuable, enabling learners to learn in knowledge after collaborative activities and the ability method can be qualitatively improved.

**Determine the Goals of the Group's Collaborative Activities:** After determining the topic of collaboration, it is necessary to set the goal of the appropriate classroom group collaboration activities, that is, to set reasonable and in-place expectations for the results of the activities, so that students feel that the goals are not difficult to achieve, as long as they work hard. With confidence, magical power is generated. This magic is the positive promotion of the achievement of the learning task, and the students are willing to work hard to achieve this goal. Before conducting group collaborative learning, the teacher must clearly express the expectations of the results of the group collaboration activities, so that students feel that the goal is not difficult to achieve, and then build confidence and complete the collaborative task. When presenting the expectations of students, they can be considered from three dimensions. The dimensions and their connotations are shown in Table 1.

Table 1. Target dimensions and their connotation

Target Dimension	Connotation description	
Knowledge goal	Understand and master the knowledge related to collaborative topics	
Capability goal	1.Skills related to specific subject knowledge	
	2.Problem solving ability	
	3.Collaboration ability	Ability to exchange information with other members of the group
		Ability to work with others to complete tasks
Emotion goal	1.Collaborative awareness (attitude and enthusiasm for working with others)	
	2.Combine the attitudes and values of specific disciplines	

**Determine the Form of Collaborative Activities:** In the organization of group collaboration activities, the simplification of the form of activities should be rejected. In addition to the commonly used classroom discussions and collaborative forms of problem solving, various forms of collaboration such as "role play" and "brainstorming" can be used to enrich teaching. The group members are divided into teachers and learners, and peer teaching is carried out. In peer teaching, the teacher must first throw out the key questions of this lesson, and the students will organize their own answers, and finally the group members will discuss together to reach a consensus. A Harvard

professor pointed out that learners tend to prefer guidance from peer partners rather than teachers or professors [5]. Therefore, peer teaching can also be used as an organizational form of classroom group collaboration activities to enhance students' enthusiasm for participation.

When choosing the form of collaborative activities, teachers need not only stick to the form of class discussion, but should be goal-oriented and select the form of classroom group collaboration activities according to specific activity tasks and course objectives.

**Groups that Organize Collaborative Activities:** The various groups involved in the collaboration are the main part of the activity. The organization of the group includes rational grouping and formulation of participation rules. The grouping form mainly consists of homogeneity and heterogeneity. The homogenous grouping divides the whole class into several homogenous groups of 4-6 people according to different learning styles. Students with the same style work together to complete the project and promote harmonious cooperation. In-group heterogeneity, inter-group homogeneity is based on the teacher's own teaching experience and understanding of learners, comprehensive ability, expertise and other factors to create grouping, while balancing the differences between groups and groups, the diversity within a group has been enhanced. Team members realize that everyone has their own strengths, complement each other within the group, and teach each other and make progress together. At the same time, it is guaranteed that the overall level of each group is almost the same, which is conducive to the fairness and rationality of the evaluation system. At present, most researchers believe that heterogeneous grouping is more conducive to the improvement of classroom group collaborative learning.

In addition to rational grouping, the organization of the group also includes the development of participation rules to clarify the role division. When making rules, it is necessary to clarify who is the spokesperson of the group, who is the leader, what is the communication mechanism, how to divide the work within the team, what are the consequences of the unfinished work, and finally determine the group participation rules. The common role in the group is the team leader. Students who have strong coordination and management skills are the team leader of the collaboration team. In addition, the team can set up timekeepers, supervisors and other roles to coordinate the work and improve the classroom. The efficiency of group collaboration activities.

## **2.2 Activity Implementation Stage**

The selection of collaborative activities takes the "problem discussion" model as an example. Combined with the teaching strategy of the ARCS model, the specific operation flow chart of the discussion mode of the classroom group collaborative learning is shown below:

**Situational creation:** The occurrence of learning is always accompanied by the corresponding situation. In the group collaboration activities, teachers use the vivid and rich image to effectively perceive the students, attracting students' attention and making them participate in the classroom. At the beginning of the group collaboration, teachers should combine classroom content to create as realistic a situation as possible, and then throw a well-designed question.

In the problem discussion mode, the throwing of the problem is the key. Closed questions have standard answers that can be used to help the learner master the student's level of learning. Students need to think more about answering open questions, and they can promote the transfer of knowledge. Therefore, the design of the problem should be as open as possible.

According to the R principle of the ARCS model, linking the collaborative learning tasks with the learners' existing knowledge and experience and future use can effectively promote students' participation in enthusiasm. Therefore, the issues thrown should be as relevant as possible to the student's existing knowledge and experience. Another way to establish relevance is to establish an association from the perspective of usefulness, to inform students in advance why they learn this thing, and what kind of problems can be solved after learning this.

**Brainstorming:** After asking questions, students will discuss this issue in groups. The group collaboration activities emphasize the learner's subjectivity, and teachers should also increase their participation while actively exploring. According to the ARCS model, fresh, ever-changing things often motivate learners to have a relatively long-lasting interest. Teachers can change the

collaborative mode. For example, some competitive game links can be used in the problem discussion mode to motivate students to participate. In addition, when students participate in a discussion, teachers should walk around the group, observe the students' collaboration and provide timely assistance. At the same time, pay attention to the appropriate intervention, to build the confidence of the students.

Answer the question: After the group discussion, the collaborative group reports on the work done in their respective groups. According to the ARCS model, this link is the time to increase confidence (C) and improve satisfaction (S). Teachers must affirm the results of the group and can also use retelling answers to motivate students. Do not rashly deny students to enhance students' confidence.

Summary conversion: After the student's report is over, the teacher will provide timely feedback on each group's report. Feedback on specific student performance during task completion is better and more effective than empty recognition. Students who receive feedback from teachers can move in the direction of challenging learning goals. For group collaboration, teachers can also get more feedback from the group, so that they can better understand the students' learning and then guide the students one step forward.

It is a strategy to help students build confidence in the ARCS model while providing student feedback while guiding them to correctly attribute the results. Students should feel that the completion of the task is the result of their own efforts. For groups that are not completed according to the objectives of the class, the teacher guides the students to analyze the cause and break down the problem to help the students regain their confidence.

### **2.3 Stage of Activity Evaluation**

The evaluation of the results of group collaboration activities is divided into two levels, namely, a collaborative evaluation of the entire group and an evaluation of individuals within the group. The assessment of individuals should be placed under the overall environment of the group. The evaluation dimension mainly refers to the target and comprehensively evaluates it from various aspects. The assessment of knowledge objectives can be tested, and the assessment of competency goals and emotional goals can be referred to the current internationally recognized standardized training scale for cooperative skills CSGOI (Leslie R. Nath & Steven M. Ross, 2002) [6], assess students' relevant skills, collaboration skills and attitudes.

## **3. Summary and Outlook**

The results of this study show that the current collaborative mode of collaborative learning mode for college students has not played a good role in the application of collaborative learning mode due to irrational collaboration mode and insufficient motivation of college students. In view of this, this study combines the motivational incentive model ARCS to give a pyramid model of group collaborative learning activity design, which is divided into three stages to guide the application of collaborative learning model: preparation, implementation and activity evaluation. During the implementation phase of the activity, the researcher gave a specific operational flow chart for the specific collaborative activity form, the problem discussion mode. The four activity processes for the problem discussion mode: situation creation, brainstorming, answering questions and summarizing the transformations give the corresponding teacher activity process and group activity process, combined with the ARCS motivation model to describe the teaching strategies that can be used in each stage. Effectively circumventing the unreasonable collaboration mode, it can effectively mobilize and maintain the learner's learning motivation, and maximize the effectiveness of the group collaborative learning model.

Regarding the deficiencies in this study, the first is to study the selection of the subjects. The sample size is small and the research subjects only choose the education technology major with strong professional foundation, which limits the promotion of research results. Secondly, the pyramid model proposed in this paper to improve the effectiveness of the classroom group collaborative learning model only has certain theoretical support, and lacks practical demonstration of its system feasibility.

Subsequently, the pyramid model will be selected according to the problem discussion mode flow chart to conduct experimental research, set the experimental group and the reference group, demonstrate the practicality and effectiveness of the pyramid model, and further improve according to the empirical research results.

## **Acknowledgments**

This paper is funded by the research topic of Hunan Province's degree and postgraduate education reform in 2018: JG2018A007 "Research and Practice on Factors Affecting the Cultivation of Graduate Students' Innovative Ability".

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