

# Effect of Cooperative Learning Strategies on Students' Learning Motivation and Alienation

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**Abstract:** This study examines and analyzes the effect of students' cooperative learning strategies on learning motivation and alienation. The sample included 367 students, who were administered a questionnaire survey on cooperative learning strategies, learning motivation and alienation. The data were analyzed and the correlation between cooperative learning strategies and students' learning motivation and alienation was verified. Considering the urban and rural educational backgrounds of college students in compulsory education as control variables, the findings verify that educational background plays a controlling role in the influence of cooperative learning strategies on students' learning motivation and sense of alienation.

**Keywords:** Learning motivation; Cooperative learning strategies; Alienation

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## 1. Introduction

Cooperative learning is a popular active learning method that is considered effective when paired with PBL <sup>[1]</sup>. The literature demonstrates course examples of the benefits of applying cooperative learning in higher education and engineering courses <sup>[2]</sup>. This study explores whether students from diverse educational backgrounds can improve their learning motivation, reduce their sense of alienation and improve their mental health through cooperative learning strategies in the wake of new educational and living environments <sup>[3]</sup>.

Considering the fact that current college students have a high level of alienation and a low level of learning motivation, this study verifies through empirical research that adopting teamwork and group communication can improve college students' learning motivation and reduce their sense of alienation <sup>[4]</sup>.

## 2. Literature review and hypotheses

### 2.1. Cooperative learning strategies

Learning strategies refer to complex plans about the learning process that learners purposefully and consciously

develop to improve learning efficiency<sup>[5]</sup>. Cooperative learning is a successful teaching strategy in which students of varying ability levels use various learning activities to improve their understanding of a subject<sup>[4-6]</sup>. Each member of the team is responsible not only for learning what is taught but also for helping their teammates, thus promoting the overall performance. Students complete the assignment only after all group members have successfully understood it<sup>[6]</sup>. The main cooperative learning strategies include jigsaw puzzles and group surveys. Jigsaw is a strategy based on groups of students (3–5), who divide the course into sub-tasks according to the size of the group. The individual of each sub-task will master the task and return to the base group to share experiences. Under the group survey developed by Herman JK (2013), the collaborative learning approach of group investigation (GI) is particularly effective in improving students' higher-order thinking skills, as students collect data and then discuss, translate, and create individual contributions to group products<sup>[7,8]</sup>. In this study, the cooperative strategy of GI is applied in the experiment.

According to the previous discussion of cooperative learning strategies in project-based teaching, the research results of student cooperative learning theory are as follows with proposed hypotheses in this study:

- (1) Hypothesis 1: Cooperative learning strategies are positively correlated with students' learning motivation.
- (2) Hypothesis 2: Students' learning motivation is negatively correlated with students' sense of alienation.

## **2.2. Urban and rural educational backgrounds**

College students in China come from different regions, cities, towns and villages, thus having diverse educational backgrounds. During the compulsory education stage, students receive training with different allocations of educational resources. Cities, counties, towns and rural education in China are currently in a state of unequal resource allocation. Some educational resources that should be allocated to rural areas are retained in cities for various reasons<sup>[9]</sup>. Under the different educational environments of cities, towns and rural areas, students' knowledge, emotions and abilities differ. Considering the previous situation regarding students' educational background, this study proposes the following hypotheses:

- (1) Hypothesis 3: As a control variable, urban and rural educational backgrounds affect students' cooperative learning strategies.
- (2) Hypothesis 4: As a control variable, urban and rural educational backgrounds affect students' learning motivation.
- (3) Hypothesis 5: As a control variable, urban and rural educational backgrounds impact students' sense of alienation.

## **2.3. Learning motivation and alienation**

Motivation to learn is a psychological process that guides students' learning activities, sustains them and drives them toward the goals set by teachers<sup>[10]</sup>. Generally, learning motivation can be categorized into intrinsic motivation (considered as a personal variable), which is the motivation to learn, promoted by the intrinsic needs of learners, such as the desire to learn and extrinsic motivation (considered as an environmental variable), which is the desire to learn as a result of the stimulation, induction and guidance of the external environment. This study evaluated students' learning motivation based on extrinsic and intrinsic motivation by considering curriculum value and self-efficacy as measurement dimensions.

Alienation refers to negative emotions such as a sense of social isolation, uncontrollability, meaninglessness, oppression and self-alienation generated between an individual and various relationship networks such as people, society, nature and oneself, caused by normal relationships or even being dominated and controlled by the object. Ma F (2014) proposes five dimensions of alienation: powerlessness, meaninglessness, normlessness, isolation,

and self-alienation <sup>[11,12]</sup>. Alienation is an important factor that affects self-concept, values, self-identity, self-esteem and other psychological characteristics <sup>[13]</sup>. However, the relationship between gender and grade is not obvious. The literature review concluded that there are many reasons for students' sense of alienation. Considering the discussion on learning motivation and the sense of alienation, this study proposes the following research hypothesis:

- (1) H6: Learning motivation plays a mediating role between cooperative learning strategies and alienation.

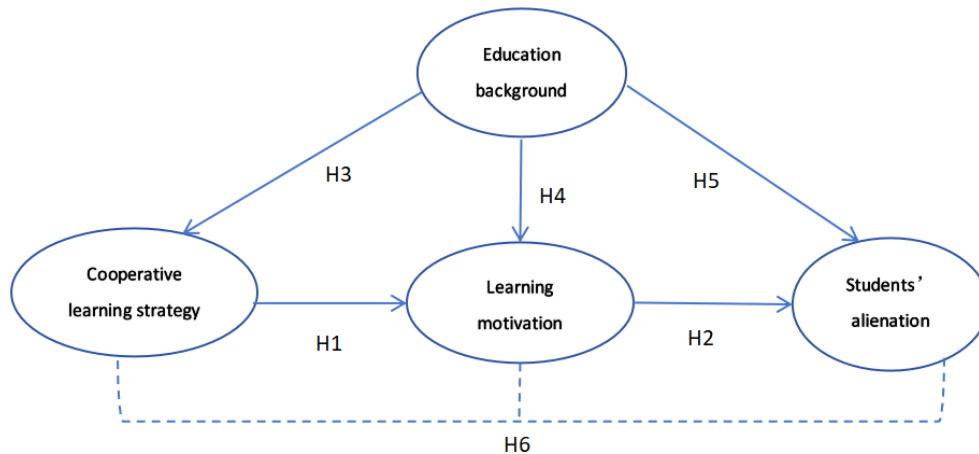


Figure 1. Conceptual framework. The model includes educational background as the control variable, cooperative learning strategy as the independent variable, learning motivation as the mediating variable and students' sense of alienation as the dependent variable. The model proposes 6 hypotheses (H1–H6).

### 3. Methodology

#### 3.1. Participants and procedure

Data on cooperative learning strategy, learning motivation and sense of alienation of students in each major grade at the School of Mechanical Engineering of Anhui Science and Technology University were collected through an online questionnaire. A total of 415 questionnaires were obtained, of which 367 valid questionnaires remained after eliminating those that did not qualify. SPSS and PLS tools were used for data analysis to evaluate the relationship between cooperative learning strategies and students' learning motivation and sense of alienation, with different educational backgrounds as control variables.

#### 3.2. Variable measurement and data analysis method

The Motivation and Strategies for Learning Questionnaire (MSLQ) was used in this study <sup>[14]</sup>. The scale was created by Pintrich, Smith, Garcia, McKeachie (the Chinese version of the questionnaire was translated by Lin Yiguang and Chang Shengmei), in conjunction with Slavin's cooperative learning model of cognitive and motivational measurement. Alienation was adapted from a realistic curriculum situation to obtain the scale in this study. After collecting the data, the model was constructed using PLS and data reliability and validity, descriptive, correlation and comparative analyses were performed using PLS combined.

### 4. Research results

#### 4.1. Descriptive analysis

A total of 415 questionnaires were collected and 367 valid questionnaires were obtained after excluding those

with low credibility. There were fewer female engineering majors, so 303 male and 64 female students were included in the survey. The participants included 107 freshmen, 95 sophomores, 119 juniors and 46 seniors. Of these, 67% reported never or occasionally cooperating in college. In primary school, 43.3% of the students were in rural areas, 33.5% in towns and 23.2% in cities. In junior high school, the proportion of rural students decreased significantly to 13.4%; 49.0% were in towns, and 37.6% were in cities (Table 1).

The 367 data collected included cooperative learning strategies, students' learning motivation, and sense of alienation. By comparing the mean values using SPSS, it was found that the values of cooperative learning strategies of primary and secondary schools in cities were 47.4 and 48.2, respectively, which were relatively high compared with those in villages and towns (Table 1). For those whose primary and junior high schools are in the city, their average learning motivation is 67.6 and 68.7, respectively, which is relatively higher than those in the countryside and towns (Table 1). Those with primary and secondary schools in rural areas had a higher sense of alienation, with averages of 48.6 and 47.0 (Table 1).

**Table 1.** Demographic Information

Measure	Item	Number	Percentage	CLS	LM	SA
Gender	Male	303	83.0	45.8	65.8	47.9
	Female	64	17.0	43.0	63.6	44.3
Primary school education background	Rural	159	43.3	44.3	64.4	48.6
	Town	123	33.5	45.3	65.1	47.0
	City	85	23.2	47.4	67.6	45.2
Middle school education background	Rural	49	13.4	44.1	63.9	51.2
	Town	180	49.0	43.4	63.2	47.5
	City	138	37.6	48.2	68.7	45.6
Grade	Freshman	107	29.2	44.2	65.0	44.4
	Sophomore	95	25.9	44.9	63.0	50.4
	Junior	119	32.4	45.5	66.7	46.7
	Senior	46	12.5	48.4	67.7	48.7
Cooperation learning in the university	Never	52	14.1			
	Occasionally	194	52.9			
	Usually	117	31.9			
	All the time	4	1.1			

CLS: cooperative learning strategy; LM: learning motivation; SA: students' sense of alienation

## 4.2. Measurement model assessment

The results in Table 3 show that Cronbach's alpha values ranged from 0.707 to 0.979, exceeding the recommended threshold of 0.7. In addition, the CR values ranged from 0.869 to 0.981, exceeding the threshold of 0.7. Table 2 shows that the AVE value ranged from 0.652 to 0.809, exceeding the recommended threshold of 0.5. We can also see from Table 2 that the factor load of all the structures exceeds the threshold of 0.7. The results confirm the reliability and convergent validity.

**Table 2.** Reliability and validity results

Construct	Cronbach's alpha	Rho A	Composite reliability	AVE
Cooperative learning Strategy (CLS)	0.953	0.958	0.960	0.753
Learning motivation (LM)	0.979	0.980	0.981	0.809
Educational background (EB)	0.713	0.823	0.869	0.769
Students' alienation (SA)	0.934	0.975	0.942	0.646

### 4.3. Structural model assessment

PLS analysis showed that cooperative learning strategies ( $\beta = 0.044$ ,  $t = 17.004$ ) positively affected learning motivation while learning motivation ( $\beta = 0.051$ ,  $t = 3.269$ ) negatively affected alienation. Therefore, H1 and H2 (Table 3) are supported.

**Table 3.** Path coefficients

Hypothesis	Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t statistics (O/STDEV)	P values	Decision
H1	CLS → LM	0.742	0.745	0.044***	17.004	0.000	Supported
H2	LM → SA	-0.168	-0.177	0.051**	3.269	0.001	Supported

PLS analysis was applied and the results were consistent with H3, H4, and H5. The educational background had a significant effect on learning strategies ( $\beta = 0.046$ ,  $t = 4.209$ ), learning motivation ( $\beta = 0.046$ ,  $t = 3.374$ ), and alienation ( $\beta = 0.050$ ,  $t = 1.970$ ). Therefore, H3, H4 and H5 are supported (Table 4).

**Table 4.** Control variable

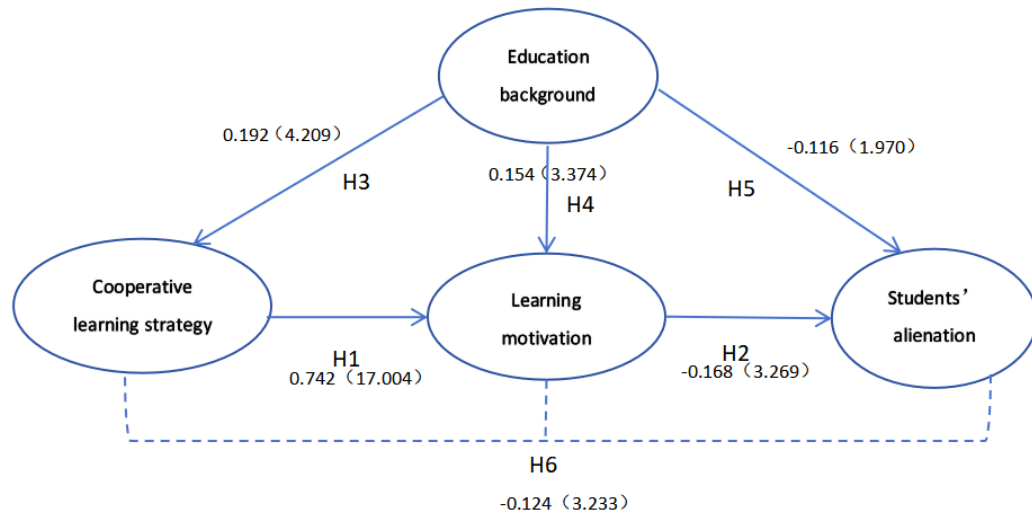
Hypothesis	Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t statistics (O/STDEV)	P values	Decision
H3	EB → CLS	0.192	0.198	0.046***	4.209	0.000	Supported
H4	EB → LM	0.154	0.161	0.046**	3.374	0.001	Supported
H5	EB → SA	-0.116	-0.131	0.059*	1.970	0.049	Supported

PLS analysis showed that learning motivation mediated the relationship between cooperative learning strategies and alienation ( $\beta = 0.038$ ,  $t = 3.233$ ). Therefore, H6 (Table 5) is supported.

**Table 5.** Specific indirect effects

Hypothesis	Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t statistics (O/STDEV)	P values	Decision
H6	CLS → LM → SA	-0.124	-0.132	0.038**	3.233	0.001	Supported

According to the model path coefficient and  $t$ -value (Figure 2), it can be concluded that learning strategies have a positive impact on learning motivation, while students' learning motivation has a negative impact on alienation. Hypotheses H1 and H2 are valid; educational background has a certain impact on alienation, learning strategies, and learning motivation; and H3, H4, and H5 are valid. According to Table 5, learning motivation plays a mediating role between cooperative learning and alienation.



**Figure 2.** PLS algorithm results. The model includes educational background as the control variable, cooperative learning strategy as the independent variable, learning motivation as the mediating variable, and students' sense of alienation as the dependent variable. The model proposes 6 hypotheses (H1–H6) with path coefficients and *t*-values.

## 5. Discussion

This study focuses on the relationship between cooperative learning strategies and students' learning motivation and sense of alienation, as well as the influence of urban and rural educational backgrounds as control variables on students' cooperative learning strategies, learning motivation, and sense of alienation. Six hypotheses are proposed and all of them are supported.

First, the survey results showed a significant relationship between collaborative learning strategies and learning motivation (H1). In addition, there was a significant relationship between students' learning motivation and alienation (H2). Therefore, the study speculates that improving students' cooperative learning strategies could effectively improve their learning motivation. When students cooperate and communicate in teams, they can improve their understanding of their knowledge and expand their thinking skills. Simultaneously, such cooperation and communication ensure that they maintain connections with team members. The study can also speculate that students' learning motivation is enhanced under the guidance of collaborative learning strategies and that learning motivation further affects students' sense of alienation (H2, H6) <sup>[15]</sup>.

Second, universities are dominated by students from different parts of the country with different personalities and basic education. Faced with different conditions, college students' cooperative learning strategy levels, learning motivation and sense of alienation vary widely. According to the survey, urban and rural educational backgrounds, as control variables, have a certain correlation with cooperative learning strategies, learning motivation and alienation (H3, H4 and H5). Students from urban educational backgrounds have higher cooperative learning strategies, higher learning motivation and lower sense of alienation (**Table 2**). Teachers should acknowledge their personal differences. From the perspective of teaching, teachers need to improve cooperative learning strategies to guide students to improve their learning motivation and reduce their sense of alienation <sup>[16]</sup>.

## 6. Conclusions

The results of this study revealed that students' cooperative learning strategies were closely related to their

learning motivation and sense of alienation in project-based teaching. The results show that:

- (1) Cooperative learning strategies have a positive effect on students' learning motivation;
- (2) Students' learning motivation has a negative influence on students' sense of alienation;
- (3) Student motivation mediates the relationship between cooperative learning strategies and students' sense of alienation;
- (4) Urban and rural educational backgrounds have an impact on students' cooperative learning strategies, learning motivation, and alienation.

## Disclosure statement

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