

An Empirical Study on the Effect of Achievement Motivation and Self-Efficacy on Social Loafing

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Abstract. Reducing or even eliminating social loafing among college students in collaborative group learning has important implications for their future careers. Yet relatively few studies have considered the impact of individual differences on social loafing, such as achievement motivation and self-efficacy. The researchers developed a structural equation model and the research hypothesis using the achievement motivation scale, self-efficacy scale, and social loafing scale, and all scales were scored on a 5-point Likert-type scale. This study used purposive sampling to select Chinese vocational college students from four representative vocational colleges in Guizhou Province, China and distributed electronic questionnaires to them. A total of 1,080 valid responses were collected (404, 309, and 367 for freshmen, sophomores, and juniors, respectively; 578 and 502 for males and females, respectively). According to the analysis, the Chinese vocational college students' achievement motivation has a negative effect on their social loafing. Moreover, self-efficacy partially mediates the effect of achievement motivation on social loafing. Therefore, in order to reduce or even eliminate social loafing of Chinese vocational college students in collaborative group learning and strengthen their cooperative skills, we suggest that educators should focus on cultivating their achievement motivation and self-efficacy.

Keywords: Chinese vocational students, Achievement Motivation, Self-efficacy, Social Loafing

1. Introduction

At present, a large number of informatization teaching platforms based on Internet technology are emerging, changing the teaching method of Chinese vocational education (Peng & Wang, 2019). Nowadays collaborative learning through group work has become a widely adopted teaching method in university flipped classrooms, massive open online courses, and project-based teaching (Cai et al., 2022; Xu, 2018), and the ability to collaborate has become a basic skill that college students must master in the information age (Peng & Wang, 2019). Vocational education in China takes the practical knowledge required for workplace tasks as the content of the curriculum, focuses on developing students' practical skills and shoulders the important task of cultivating a large number of high-quality technical and skilled personnel (Zhao & Gao, 2022), and the capacity for collaboration is also a crucial skill required for technical and skilled personnel when entering the workforce (Cai et al., 2022). Yang et al. (2023) pointed out that the use of group cooperative learning in the university teaching process can not only effectively improve students' teamwork ability, communication ability and independent learning ability, but also enliven the atmosphere of the course and improve the learning efficiency. Moreover, cooperation learned through collaborative learning during college can have a significant impact on the students' future careers (Yang et al., 2023). The Framework for 21st Century Learning also proposed that students must learn essential learning and innovation skills (e.g., Collaboration and Communication) for success in today's highly collaborative workforce (The Partnership for 21st Century Learning., n.d.).

It is important to note that when educators focus on the benefits of group collaboration, they must also be aware of the significant negative impact of social loafing on group collaboration (Hall & Buzwell, 2012). Social loafing remains widespread among participants of different cultures, nationalities, genders, and ages (Karau & Williams, 2001), and seriously undermines the team collaboration among students (Luo et al., 2021; Marder et al., 2021). According to social loafing theory, social loafing can reduce the enthusiasm of the members in a group and affect the overall performance of the group, resulting in the final outcome being poorer than expected (Ofole, 2022; Samarakoon & Imbulpitiya, 2020). Therefore, finding mechanisms to reduce social loafing in teamwork has become important and necessary (Samarakoon et al., 2021).

Growing evidence suggests that individual differences can explain the group members' extent of social loafing (Bolin & Neuman, 2006). However, relatively few studies have considered the individual differences of the team members that lead to social loafing (Gabelica et al, 2022; Karau & Wilhau, 2020). Concerning individual differences in social loafing and personal achievement, it has been found that social loafing can be reduced or even eliminated in individuals with a high achievement motivation (Karau & Wilhau, 2020). Research regarding achievement motivation and social loafing shows that achievement motivation negatively predicts social loafing and that social loafers tend to lack high achievement motivation (Novliadi & Eliana, 2017). Yet the relationship between achievement motivation and social loafing may be mediated by self-efficacy. Individuals with higher achievement motivation feel a lower intensity of stress when faced with difficulties than those with lower achievement motivation (Brunstein & Heckhausen, 2018; Yang et al., 2015), are more likely to build higher self-efficacy (Bandura, 1978), and work harder in their group and exhibit less social loafing (Ajiboye & Olubela; 2020).

Some studies have explored the effect of individual achievement motivation on social loafing (Karau & Wilhau, 2020; Novliadi & Eliana, 2017), the effect of achievement motivation on self-efficacy (Bjørnebekk et al., 2013), and the effect of self-efficacy on social loafing (Ajiboye and Olubela; 2020). Additionally, most of the studies examining social loafing utilized corporate employees as their participants (Akgunduz & Eryilmaz, 2018; Alyahya et al., 2022; Khan et al., 2020). While few studies have explored the mediating role of self-efficacy in the relationship between achievement motivation and social loafing by taking vocational college students, who are intensively engaged in group cooperative teaching in the context of vocational education in China, as the research participants.

Given the aforementioned background, this study aims to examine how achievement motivation and self-efficacy affect social loafing in cooperative group learning for Chinese vocational college students. This study investigates two questions: (a) whether Chinese vocational college students' achievement motivation acts as a negative predictor of their social loafing and (b) whether self-efficacy mediates the effect of achievement motivation on social loafing. Answering these two questions may provide suggestions for reducing social loafing among Chinese vocational college students and improving the quality of training for technical and skilled personnel.

2. Literature Review

2.1. Social loafing and contributing factors

Social loafing refers to a behavior where the effort of an individual decreases when the number of members in the group increases (Hoffman, 2020). Research on social loafing dates back to Max Ringelmann's rope-pulling experiments in the 1880s, in which he found that when several people pull on a rope together, the force is less than the sum of the pulls when each person pulls individually, and that this tendency becomes more pronounced as the number of people increases. The cause of this phenomenon is not a lack of coordination among group members, but rather a decrease in their motivation and willingness to exert effort (Karau & Wilhau, 2020).

2.2. Relevance in educational settings

The model of cooperative group learning is widely used in Chinese universities (Xu, 2018), and has drawn the interest of numerous researchers (Cai et al., 2022; Huang et al., 2021; Peng & Wang, 2019). For example, project-based teaching in vocational colleges emphasizes students' cooperation in small groups based on the project implementation plan formulated by the teacher. Each group member has to play different roles to fulfill their respective work tasks, and through communication, discussion and sharing, they can bring their own strengths into play to solve complex problems based on real work scenarios. Combined with artificial intelligence and big data technology, students are guided to conduct self-evaluation and group mutual evaluation on their performance during the implementation of the program (Cai et al., 2022). However, none of these researchers has considered the destructive effects of social loafing on group cooperation in the context of the deep integration of artificial intelligence, big data, and vocational education.

2.3. The effect of achievement motivation on social loafing

McClelland et al. (1976) pointed out that individuals with strong achievement motivation tend to complete difficult tasks to a high standard (achieving goals beyond themselves and others). According to Forsyth's motivation theory, motivated individuals tend to give their best to group tasks, while less motivated individuals tend to exhibit social loafing behavior (Forsyth, 2009). Individuals with high achievement motivation are driven to pursue challenging goals (McClelland et al., 1976) and they tend to exert greater effort (Zhao et al., 2018). Consequently, they may tend to avoid social loafing (Novliadi & Eliana, 2017). Studies shows that individuals with high achievement motivation try their best to achieve a specific goal, whether or not the rest of the team is doing their best, whereas individuals with low achievement motivation tend to engage in social loafing when they discover that their group members are not exerting sufficient effort (Stark et al., 2007). Seitchik and Harkins (2014) also found experimentally that priming achievement motivation can motivate individuals to work hard on collective tasks. Therefore, this study proposed the following hypothesis regarding Chinese vocational college students:

H1: Achievement motivation is a significant negative predictor of social loafing.

2.4. The mediating role of self-efficacy

According to self-efficacy theory (Bandura, 1978), the emotional and psychological state (e.g., anxiety, fears) of individuals when they are performing a task leads to lower levels of self-efficacy. Reducing

stress is beneficial in eliminating the fears and anxiety of various dysfunctions. Several studies showed that individuals with higher achievement motivation experience less stress when faced with difficulties (Brunstein & Heckhausen, 2018; Yang et al., 2015), which leads to high self-efficacy (Bandura, 1978). Researchers have highlighted those individuals with high achievement motivation are more confident in their abilities and believe that they can perform challenging tasks (Nicholls, 1984; Ye & Hagtvet, 1992). Through path analysis, Bjørnebekk et al. (2013) found that the college students' achievement motivation positively can predict self-efficacy. The present study inferred that a higher level of achievement motivation is associated with a higher level of self-efficacy. Sanna (1992) noted that self-efficacy theory can provide a strong theoretical underpinning for social loafing; the participants' performance differences resulted from the different self-efficacy expectations that they spontaneously generated when confronted with a collective task. Miller (2001) noted that the level of self-efficacy in a group directly or indirectly affects the effort made by the members of the group. Increasing the self-efficacy of workers can help to reduce their social loafing (Ajiboye and Olubela; 2020). Therefore, it can be inferred that individuals with high self-efficacy are less likely to engage in social loafing when they are performing tasks.

Given the aforementioned analyses, this study proposed the following hypothesis regarding Chinese vocational college students:

H2: Self-efficacy mediates the effect of achievement motivation on social loafing.

2.5. Hypothetical research model

The present study constructed a hypothetical model on the basis of the existing theories and related research and proposed that achievement motivation negatively predicts social loafing. In addition, the present study assumed that self-efficacy mediates the relationship between achievement motivation and social loafing. The hypothetical model is presented in Fig. 1.

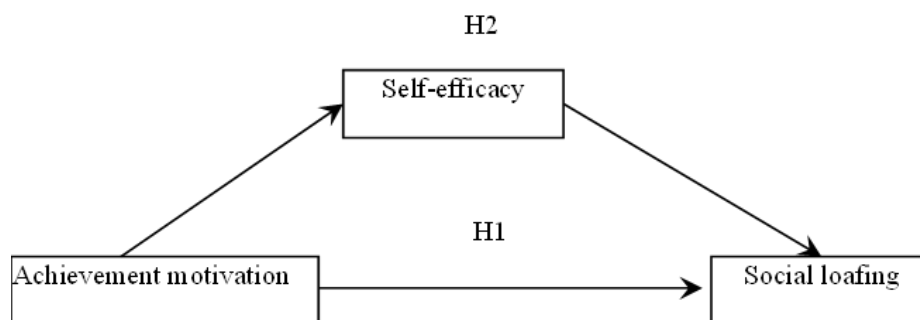


Fig. 1: Hypothetical research model.

3. Research Methodology

3.1. Sample and data collection

The data related to the achievement motivation, self-efficacy, and social loafing of Chinese college students was collected through an online questionnaire. This study used purposive sampling to select Chinese vocational college students from four representative vocational colleges in Guizhou Province, China. These vocational colleges are at the forefront of daily teaching practices that incorporate cooperative group learning. In total, 1,080 valid questionnaire responses were collected, of which 578 (53.5%) and 502 (46.4%) were completed by male and female students, respectively. Among the respondents, 404 (37.4%), 309 (28.6%), and 367 (34.0%) were freshmen, sophomores, and juniors, respectively.

The questionnaire was approved by the administrators of the four vocational colleges. The researchers collected the raw data by administering the online questionnaire to the students from the four vocational colleges. All respondents were informed of the research objectives and assured that their privacy would be protected. They all participated in the survey on a voluntary basis. The present study did not involve any major ethical problems.

3.2. Research instruments

Achievement motivation scale: This study uses Achievement Motivation Scale (AMS) jointly revised by Chinese researcher Ye and Norwegian researcher Hagtvet in 1988. The adopted 30-item scale was comprised of two subscales (the motivation to pursue success and motivation to avoid failure). The first 15 items measured the motivation to pursue success and the other 15 items measured the motivation to avoid failure. A 5-point Likert scale with endpoints ranging from 1 (strongly disagree) to 5 (strongly agree) was employed as the evaluation method. Achievement motivation is comprised of the motivation to pursue success and the motivation to avoid failure. During the execution of a task, these two motivations usually coexist and simultaneously influence an individual's achievement behavior. However, they typically differ in terms of the strength of their influence. Achievement motivation is measured by subtracting the motivation to avoid failure from the motivation to pursue success (Atkinson, 1964; Heckhausen & Heckhausen, 2018), with a higher score indicating a higher level of achievement motivation.

Self-efficacy scale: Self-efficacy refers to an individual's belief, judgment, or subjective assurance and perception of their ability to perform a specific behavior or activity at a specific level (Bandura, 1978). In the present study, the self-efficacy scale revised by Wang et al. (2001) was used to measure the variable of self-efficacy. The self-efficacy scale used in the present study comprised of 10 items rated on a 5-point Likert scale with endpoints ranging from 1 (strongly disagree) to 5 (strongly agree), with a higher score indicating a higher level of self-efficacy.

Social loafing scale: The social loafing scale used in the present study was comprised of three items (e.g., in a study group, I put in my maximum effort) rated on a 5-point Likert scale with endpoints ranging from 1 (strongly disagree) to 5 (strongly agree), with a higher score indicating a lower level of social loafing.

3.3. Data analysis techniques

In the present study, SPSS 22 was used to verify the reliability and validity of the questionnaire, and Amos 26 was used to construct the structural equation model (Schumacker & Lomax, 2004). Bias-corrected bootstrapping with a 95% confidence interval and 1,000 bootstrap samples was employed to verify the mediating effect of self-efficacy on the relationship between achievement motivation and social loafing. The lower and upper bounds of the confidence intervals were calculated to test the significance of each effect (Preacher & Hayes, 2008; Zheng & Cai, 2016).

4. Data Analysis

4.1. Reliability and validity analysis

To meet the goodness-of-fit requirements for each dimension, the present study first excluded observable variables with factor loadings of $<.600$ and excluded some observable variables with non-independent residuals based on modification index (Zhang et al., 2020). The variables retained in the questionnaire and corresponding results for achievement motivation, self-efficacy, and social loafing are presented in Table 1. In the present study, Cronbach's Alpha coefficient ranged from 0.838 to 0.891, meeting the threshold of >0.800 , which indicates that the scales have good internal consistency (Nunnally, 1978). The levels of composite reliability (CR) ranged from 0.839 to 0.893, meeting the threshold of >0.600 , and the levels of average variance extraction (AVE) ranged from 0.512 to 0.639, meeting the threshold of >0.500 , which indicates that the scales have good convergent validity and

combined reliability (Bagozzi & Yi, 1988; Fornell & Larcker, 1981).

Table 1: Results for variables retained in questionnaire.

Variable	Questionnaire items	std.	SMC	CR	AVE	Cronbach's Alpha	
Achievement motivation	MS1	0.697	0.486	0.886	0.527	0.885	
	MS2	0.715	0.511				
	MS3	0.793	0.629				
	MS4	0.739	0.546				
	MS5	0.675	0.456				
	MS6	0.791	0.626				
		MS7	0.660	0.436	0.893	0.546	0.891
		MF1	0.674	0.454			
		MF2	0.747	0.558			
		MF3	0.792	0.627			
		MF4	0.811	0.658			
		MF5	0.796	0.634			
		MF6	0.635	0.403			
	Self-efficacy	SE1	0.619	0.383	0.839	0.512	0.838
SE2		0.818	0.669				
SE3		0.751	0.564				
SE4		0.683	0.466				
SE5		0.693	0.480				
Social loafing	SL1	0.812	0.659	0.841	0.639	0.841	
	SL2	0.818	0.669				
	SL3	0.767	0.588				

4.2. Discriminant validity analysis

The correlation coefficients between all scales ranged from -0.761 to 0.677 and the obtained AVE ranged from 0.716 to 0.799 (i.e., greater than the inter-scale correlation coefficients). Accordingly, the questionnaire exhibited discriminant validity (Fornell & Larcker, 1981) (see Table 2).

Table : Composite reliability and discriminant validity

	AVE	Motivation to pursue success	Motivation to avoid failure	Self-efficacy	Social loafing
Motivation to pursue success	0.527	0.726			
Motivation to avoid failure	0.546	0.274***	0.739		
Self-efficacy	0.512	0.677***	0.339***	0.716	
Social loafing	0.639	-0.761***	-0.234***	-0.682***	0.799

Note: *p<0.05, **p<0.01, ***p<0.001

4.3. Indicators of model fit

The structural equation model was established on the basis of a hypothetical model (see Fig. 2) and the

corresponding goodness-of-fit indices were as follows: $\chi^2 = 40.93$ ($p < .000$), $\chi^2/df = 1.64$, GFI = 0.937, AGFI = 0.922, RMR = 0.046, SRMR = 0.043, RMSEA = 0.050, and NFI = 0.939, CFI = 1.00, indicating an acceptable overall model fit (Wu, 2010) (see Table 3).

Table 3: Model fit indicators

Goodness-of-fit index	χ^2/df	GFI	AGFI	RMR	SRMR	RMSEA	NFI	CFI
Standard	<3	>.90	>.90.	<.05	<.05	<.08	>.90	>.90
Measured value	1.64	0.937	0.922	0.046	0.043	0.050	0.939	1.00

5. Results

5.1. Descriptive statistics

The mean (M) and standard deviation (SD) values for achievement motivation were 0.378 and 1.014, respectively. This indicates that the motivation to pursue success and the motivation to avoid failure were basically at the same level among Chinese vocational college students. The M and SD values for self-efficacy were 3.288 and 0.724, respectively. The M and SD values for social loafing were 2.238 and 0.909, respectively. The aforementioned results indicate that achievement motivation and self-efficacy of Chinese vocational college students were at the average level, while their social loafing were slightly below the average level.

5.2. Total effect

Table 4 reveals that the bias-corrected 95% confidence interval (-0.429, -0.319) of the standard total effect (-0.374) did not contain a zero value and that the results for the total effect reached a significant level ($p < 0.05$). This finding indicates that the achievement motivation of the Chinese vocational college students was a significant negative predictor of social loafing; thus, H1 was supported.

5.3. Indirect effect

Table 4 reveals that the bias-corrected 95% confidence interval (-0.192, -0.105) of the standardized indirect effect (-0.148) did not contain a zero value, indicating that the standardized indirect effect was significant ($p < 0.05$) and that a mediation effect was present (MacKinnon, 2008). This finding indicates that self-efficacy mediated the effect of achievement motivation on social loafing, and that H2 was supported.

5.4. Direct effect

Table 4 reveals that the standardized direct effect of achievement motivation on social loafing was -0.227 and its bias-corrected 95% confidence interval (-0.285, -0.173) did not contain a zero value, indicating a significant direct effect ($p < 0.05$). This finding indicates that self-efficacy partially mediated the effect of achievement motivation on social loafing (Cheung & Lau, 2008).

Table 4: Summary of mediation effects.

Variable	Estimate	p value	Bias-Corrected 95% Confidence Interval	
			Lower	Upper
Achievement motivation → Self-efficacy → Social loafing				
Standardized indirect effect	-.148	<0.05	-.192	-.105
Standardized direct effect	-.227	<0.05	-.285	-.173
Standardized total effect	-.374	<0.05	-.429	-.319

Note: Standardized estimation of 1,000 bootstrap samples.

Achievement motivation explained 6% of the variance in self-efficacy, and achievement motivation and self-efficacy collectively explained 51% of the variance in social loafing (see Fig. 2).

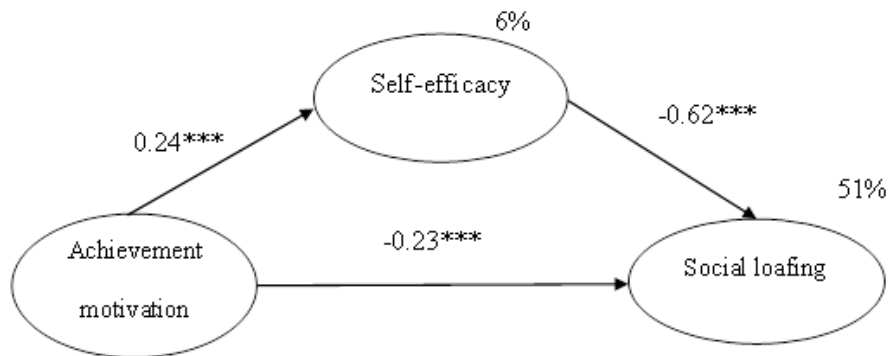


Fig. 2: Structural equation model

6. Discussion

Our study showed that the achievement motivation of the vocational college students was a negative predictor of their social loafing tendency (H1), i.e., a high achievement motivation can reduce or even eliminate social loafing in group tasks. The finding of this study concurs with the relevant research findings (Novliadi & Eliana, 2017; Seitchik and Harkins, 2014) and validates Forsyth's motivation theory (Forsyth, 2009). Individuals with high achievement motivation believe that they are more decisive in team performance outcomes than individuals with low achievement motivation, and that the performance of the other team members does not guarantee good team performance. However, individuals with low achievement motivation do not have the intrinsic motivation to work hard on achievement-related tasks. As a result, individuals with low achievement motivation do not work hard on collective tasks, regardless of whether the other team members are exerting their best effort because they can hide in the team without being held responsible for their own performance (Hart et al., 2004). Individuals with high achievement motivation typically strive to complete challenging tasks to a high quality and quantity and that social loafing inhibits goal attainment. Individuals with high achievement motivation tend to avoid social loafing behavior that may compromise the quality of task completion (Novliadi & Eliana, 2017). Thus, achievement motivation was a crucial factor that influenced the social loafing tendency of the Chinese vocational college students when they worked in groups. That is, increasing the achievement motivation of Chinese vocational college students can reduce their social loafing tendency in cooperative group learning.

Our study also showed that self-efficacy mediated the effect of achievement motivation on social loafing (H2). Achievement motivation not only had negative, direct, and predictive effect on social loafing but also indirectly influenced social loafing through self-efficacy. Achievement motivation had a positive predictive effect on self-efficacy, which is a finding consistent with those of Nicholls (1984) and Ye and Hagtvet (1992). Different levels of achievement motivation cause individuals to have different emotional responses when faced with a task; individuals with high achievement motivation are more confident, i.e., have higher self-efficacy (Ye & Hagtvet, 1992). However, individuals with low achievement motivation can generate negative emotional responses, e.g., stress, restlessness, and fear (Runstein & Heckhausen, 2018; Yang et al., 2015; Ye & Hagtvet, 1992). This can reduce an individual's level of self-efficacy (Bandura, 1978). Self-efficacy had a negative predictive effect on social loafing, which is consistent with the findings of Ajiboye and Olubela (2020). Self-efficacy is the primary factor

that influences behavior (Bandura, 1978). Individuals with high self-efficacy believe that they are capable of performing the tasks that need to be done and that positive outcomes can be achieved through their efforts (Sanna, 1992). They tend to work hard on achieving success and are less likely to engage in social loafing within their group (Ajiboye & Olubela, 2020). In summary, higher levels of achievement motivation can encourage Chinese vocational college students to pursue their goals with a positive attitude and less fear of failure. This contributes to enhancing self-efficacy and confidence in dealing with challenges, thereby strengthening their willingness to take positive action and reducing social loafing effectively.

Further analysis in this study revealed that self-efficacy partially mediated the effect of achievement motivation on social loafing, suggesting that high achievement motivation not only directly reduces the tendency of social loafing to a certain extent among vocational college education students in group learning tasks, but also improves their self-efficacy, which further indirectly reduces the tendency of social loafing.

7. Conclusions

The present study applied motivation theory and self-efficacy theory to establish a mediation model to explain the achievement motivation, self-efficacy, and social loafing of Chinese vocational college students. Through structural equation modeling, the model was verified to exhibit a good fit and high explanatory power. The research results revealed are as follows: (a) the achievement motivation of the Chinese vocational college students negatively predicts social loafing. This finding indicates that individuals with high achievement motivation are less likely to engage in social loafing when they perform group tasks. (b) Self-efficacy partially mediates the effect of achievement motivation on social loafing, that is, while achievement motivation of the Chinese vocational college students indirectly affects social loafing by influencing their self-efficacy, it can also directly affect their social loafing. Therefore, Chinese vocational institutions and educators should take measures to enhance students' achievement motivation and self-efficacy to reduce or even eliminate their social loafing, which will help strengthen their cooperative skills and lay a solid foundation for future career advancement.

8. Recommendations

According to weiner's attribution theory, attribution affects achievement motivation which can be reinforced by attributing success to internal and stable factors and attributing failure to external and unstable factors (Weiner, 1974). Teachers should skillfully apply attribution strategies when they are attributing successes and failures in the context of students. Specifically, teachers should enhance the achievement motivation of students by attributing the success of these students to their ability or hard work, while also attributing their failure to bad luck or task difficulty (Xiang, 2000). Thus, educators should develop appealing course content to stimulate student interest, increase student engagement, motivate students to achievement motivation.

Margolis and McCabe (2006) highlighted those teachers can improve the self-efficacy of their students by exploring their past experiences of success and failure, vicarious experiences, and verbal persuasion. Moreover, teachers can focus on verbal persuasion by providing explicit encouragement, praise, and discouragement or they can focus on vicarious experiences by creating situations where students can perceive their peers and teachers as role models (Bhati & Sethy, 2022). Therefore, educators can reinforce students' self-efficacy in the teaching process by assigning tasks that are appropriately challenging, providing timely feedback and encouragement. This approach can help alleviate their apprehension when faced with challenges foster positive behaviors.

9. Limitations

In this study, only students from four representative higher vocational colleges and universities in Guizhou Province were selected for the survey. To enhance the reliability and persuasiveness of the

findings, future studies should expand the survey to higher vocational students from other provinces in China, to improve the generalizability of the findings.

The data used in the study were based on participants' self-reports, and the data may have been influenced by subjective bias. Individuals may be biased in answering questions due to social expectations or self-expression. In addition to self-report, further research can be done at a later stage in conjunction with behavioral observations and interviews. This will help reduce the impact of self-report bias on the results.

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