

The Relationship Between Students' Collaborative Leadership and Learning Engagement at Z College in Henan Province, China

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Abstract: This study aimed to explore the relationship between college students' collaborative leadership and learning engagement at Z College in Henan Province, China. Based on the Morgan table, this study adopted random sampling to select 380 college students from Z College in Henan Province, China as research subjects. This study mainly adopted the College Students' Collaborative Leadership Scale developed by Wang (2022) and the Learning Engagement Scale developed by Fu (2022). Descriptive statistical analysis, independent samples t-test, one-way ANOVA analysis, and Pearson correlation analysis were used in the research process. The results showed that The total collaborative leadership score ($M = 3.67$, $SD = .75$) was at a high level, and the total learning engagement ($M = 3.64$, $SD = .40$) was also at a high level. There were significant differences in college students' collaborative leadership at Z College in Henan Province, China, in terms of different demographic background variables (i.e., gender, residence, grade, major, and class leader). There were significant differences in college students' learning engagement at Z College in Henan Province, China, in terms of different demographic background variables (i.e., gender, residence, grade, and class leader). The correlation coefficient between overall college students' collaborative leadership and learning engagement is $r = .349$, $p < .01$, indicating a significant positive correlation between the two variables. Finally, based on the research results, suggestions were made: a) focus on group differences and precisely enhance college students' collaborative leadership; b) focus on existing problems and optimize the status of college students' learning engagement, and c) based on the synergy effect, promote the co-cultivation of leadership and learning engagement.

Keywords: Collaborative Leadership, Learning Engagement, College Students, College in Henan Province.

1. Introduction

In the context of intensified global competition and the popularization of higher education, the international academic community has established a mature system of multi-theory integration and multi-method application in leadership research. Early research centered on leadership trait theory and behavior theory gradually expanded to multiple paradigms, such as transformational leadership and service-oriented leadership, and demonstrated obvious interdisciplinary characteristics. The intersection of perspectives from disciplines such as psychology, sociology, and management promoted an in-depth exploration of leadership formation mechanisms, influencing factors, and effectiveness evaluation (Silva, 2016).

With the acceleration of the

modernization process of socialism with Chinese characteristics, research on leadership in the Chinese academic circle has gone through a development stage from introducing Western theories to localized innovations. Early research focused on leadership practices in business management and administrative management. In recent years, it has gradually extended to various scenarios such as public services and education. Especially in the context of digital transformation and the flattening of organizational structure, new research propositions have been advanced regarding the connotation definition and capability dimension of leadership. In the specific practice of education, the leadership development of college students, as an important force for building future society, has also received extensive attention.

In the new phase of higher education that

had been advancing toward connotative development, college students, as the pivotal group within the country's pool of innovative talent, had garnered significant attention regarding the cultivation of their comprehensive abilities and the quality of their academic development. Among these aspects, leadership was a crucial indicator for assessing college students' social adaptability and future development potential. It not only encompassed core competencies such as teamwork and decision-making and coordination but also directly influenced students' performance in campus practice and future career settings (Cui & Wang, 2015). Learning engagement, as a core variable reflecting college students' academic participation and growth status, was not only associated with the construction of the knowledge system and the enhancement of professional capabilities but also served as an important observation point for evaluating the quality of talent cultivation in colleges and universities (Ren, 2022).

At that time, local undergraduate colleges, to cultivate application-oriented talents, had been gradually emphasizing the cultivation of student leadership and the guidance of learning engagement. However, in practice, two challenges had persisted. On the one hand, some students had cognitive limitations regarding leadership, equating it with "management positions." They had shown insufficient willingness to actively participate in club activities and project practices, resulting in a lack of systematic training in relevant abilities. On the other hand, there had been a widespread imbalance in learning engagement. Some students had exhibited issues such as low classroom participation, unclear academic goals, and insufficient motivation for self-directed study after class (Zhang, 2021). This dual situation of "inadequate leadership development" and "the need for improvement in learning engagement" had not only restricted the all-around growth of individual students but also created a gap with the educational orientation of local undergraduate institutions, which aimed to serve regional development and cultivate high-quality applied talents. There had been an urgent need to clarify the relationship between the two through specialized research to provide a basis for

optimizing the training path.

As a typical local undergraduate institution, Z College in Henan Province was positioned to cultivate applied talents. Its student body not only shared the common characteristics of college students' growth and development but also had unique features in terms of ability development and academic engagement due to its educational characteristics and regional economic background. Existing research on college students' collaborative leadership and learning engagement had mostly focused on key universities, while there had been relatively few specialized studies on the student groups of local undergraduate colleges. At the same time, there had still been room for further exploration of the intrinsic connection between the two. These issues had great practical significance for local undergraduate institutions to improve their talent cultivation systems.

In light of this, this study took the students of Z College in Henan Province as the research subjects. It systematically investigated the current characteristics of leadership and learning engagement and deeply analyzed the intrinsic connection between the two. This research not only offered empirical support for the school to optimize the curriculum for leadership development and improve the incentive mechanism for learning engagement, but also assisted it in enhancing the quality of applied talent cultivation. Additionally, it provided a reference sample for similar local undergraduate institutions to conduct related research and practice, enriched the localized research findings on the relationship between college students' collaborative leadership and learning engagement, and thereby offered a theoretical and practical basis for improving the comprehensive quality of applied talents in the field of higher education.

Research Objectives

- 1) To understand the demographic characteristics of students at Z College in Henan Province in China, including gender, residence, grade, major, and class leader.
- 2) To understand the current status of students' collaborative leadership at Z College in Henan Province.

collaborative leadership nature of college students was not fundamentally different from that of other social groups. Therefore, based on general collaborative leadership research, they developed the Student Leadership Practice Inventory (SLPI), dividing college students' collaborative leadership into five core dimensions. These were "model the way" for behavioral demonstration, "inspire a shared vision" for clear goal direction, "challenge the process" for breakthrough innovation, "enable others to act," and "encourage the heart." This division framework, which took into account both universality and the characteristics of the student group, became an important reference for measuring collaborative leadership among early college students.

Niu (2009) adjusted the scale according to the behavioral characteristics of Chinese college students and compiled the Chinese College Students' Collaborative Leadership Behavior Questionnaire. It extracted 12 dimensions, covering elements at the ability level, such as conflict coordination, persuasion ability, and foresight. It also included dimensions at the behavioral and attitudinal levels, such as caring for subordinates, maintaining unity, and supervisory orientation, fully reflecting the orientation toward college students' collaborative leadership behavior. In addition, the Collaborative Leadership Scale for College Students developed by Wang (2022) had distinct adaptive characteristics. The questionnaire consisted of 31 items and measured five dimensions: practical ability, communication and collaboration ability, emotional intelligence, collaborative leadership consciousness, and innovative ability. It not only absorbed the focus on core elements such as ability and awareness in previous studies but also further refined the key ability dimensions of college students in campus practice and team interaction, especially in the actual scenarios of college students' collaborative leadership development.

Research on Learning Engagement

Tyler (1979) was the first to define learning engagement as the time students spent on tasks. This definition emphasized college students' time allocation to academic tasks and its effect on academic performance, laying the foundation for

subsequent quantitative studies of learning engagement.

Zhao et al. (2020) defined learning engagement as college students' dual engagement in behavioral performance and psychological aspects during learning activities. Cognitively, it referred to the use of deep-learning strategies to integrate new and old knowledge; emotionally, it reflected interest in learning and connections with peers; behaviorally, it was shown in punctual attendance and active participation in learning activities. Men (2022) further emphasized learning engagement as a dynamic process rather than a single-point status, describing it as a continuous positive psychological state shown throughout course study, research practice, and career planning. This state involved not only effort and persistence but also positive attitudes toward academic challenges and intrinsic motivation for sustained learning.

The Correlation between Collaborative Leadership and Learning Engagement

Leithwood & Seashore (2011) explored the relationship between participation in leadership development programs and students' learning behavior through questionnaires and data analysis. Their study found that students who participated in programs such as leadership training and campus club management exhibited significantly higher leadership levels than those who did not. More importantly, this high level of leadership further translated into active learning engagement behaviors. This was manifested in a greater tendency to choose challenging tasks in course learning, a more proactive organizational role in group collaboration, and greater persistence in after-class self-study.

Yang et al. (2018) analyzed the relationship between student leadership and learning engagement among medical college students and found that the leadership traits formed by students in organizing and participating in activities, such as goal planning, interpersonal communication, and resource integration, were not only applicable to organizational management scenarios but also transferable to the academic field. Specifically, students with strong leadership skills were better at formulating clear study plans,

more proactive in communicating academic issues with teachers and classmates, and demonstrated stronger execution ability in research projects or course tasks.

Zhang (2021) found that experience as a student leader not only had a significant positive effect on leadership improvement but also showed a clear positive relationship between leadership level and the degree of learning engagement. The decision-making and communication skills honed by student leaders in their daily work naturally transferred to the academic context, enabling them to more efficiently organize the knowledge framework in course learning, better coordinate the division of labor among members in group cooperation, and demonstrate greater resilience in the face of academic difficulties.

2. Materials and Methods

This study employed random sampling to recruit participants from the total student population of 19,000 at Z College in Henan Province, China. Based on the sample size table developed by Krejcie and Morgan (1970), a sample of 380 students was determined to be sufficient for this population size. A random sample of 380 students was selected, and the returned questionnaires were screened for validity. A total of 362 valid responses were collected, yielding an effective response rate of 95.26%.

This study, "The Relationship between College Students' Collaborative Leadership and Learning Engagement at Z College in Henan Province, China," mainly adopted the College Students' Collaborative Leadership Scale developed by Wang (2022) and the Learning Engagement Scale developed by Fu (2022). Based on the aforementioned literature review, questions related to demographic background variables were added to form the research questionnaire used in this paper.

The College Students' Collaborative Leadership Questionnaire consisted of 31 items, measuring college students' collaborative leadership from five dimensions: practical ability, communication and collaboration ability, emotional intelligence, leadership consciousness, and innovative ability. The Scale developed had a

Cronbach's α coefficient of .981, with each dimension's coefficients being as follows: practical ability was .973, communication and collaboration ability was .931, emotional intelligence was .926, leadership consciousness was .891, and innovative ability was 0.952. The results of exploratory factor analysis showed that the KMO value was .929, and the Bartlett test of sphericity reached a significant level ($p < .001$), which indicated that the data were suitable for factor analysis. The five factors extracted cumulatively explained a variance of 68.339%, which exceeded 60%, indicating that the scale had ideal validity.

The Learning Engagement Questionnaire consisted of 16 items, measuring the degree of learning engagement from three dimensions: vigor, dedication, and absorption. The Scale compiled had a Cronbach's α coefficient of .873 in terms of reliability, with each dimension coefficients as follows: vitality was .858, dedication was .858, and absorption was .844. The results of the exploratory factor analysis showed that the KMO value was .844 and that Bartlett's test of sphericity was significant ($p < .001$), indicating that the data were suitable for factor analysis. The three extracted factors cumulatively explained 68.881% of the total variance, which exceeded 60% and indicated that the scale had good validity.

This study collected data using questionnaires and processed the data using SPSS 26.0 software. First, descriptive statistical analysis was conducted on the valid data, using frequency and percentage statistics to present demographic background information and the current status of collaborative leadership and learning engagement among the college students at Z College in Henan Province, thereby clarifying the overall characteristics of the two variables. Second, a comparative analysis between groups was conducted to explore the differences in the collaborative leadership and learning engagement levels of the college students in terms of demographic background variables such as gender, residence, grade, major, and whether they served as class leaders. Subsequently, correlation analysis was conducted to test the association between collaborative leadership and learning engagement, and the research hypothesis was verified in

combination with the aforementioned statistical results and the conclusions of the correlation analysis.

3. Results

1) The specific sample sizes of the subjects in terms of different demographic background variables were as follows: In terms of gender, there were 164 male subjects, accounting for 45.3%, and 198 female subjects, accounting for 54.7%. In terms of residence, there were 209 rural students, accounting for 57.7%, and 153 urban students, accounting for 42.3%. In terms of grade, there were 87 freshmen, accounting for 24.0%, 92 sophomores, accounting for 25.4%, 93 juniors, accounting for 25.7%, and 90 seniors, accounting for 24.9%. In terms of major, there were 172 engineering students, accounting for 47.5%, and 190 non-engineering students, accounting for 52.5%. In terms of class leaders, there were 135 class leaders, accounting for 37.3%, and 227 non-class leaders, accounting for 62.7%.

Table 1: Demographic Characteristics of the Student Sample

Demographic Variable	Group	<i>n</i>	%
Gender	Male	164	45.3
	Female	198	54.7
Residence	Rural	209	57.7
	Urban	153	42.3
Grade	Freshman	87	24.0
	Sophomore	92	25.4
	Junior	93	25.7
	Senior	90	24.9
Major	Engineering	172	47.5
	Non-Engineering	190	52.5
Class leader	Class Leader	135	37.3
	Non-Class Leader	227	62.7
Total		362	100

Overall, the distribution of demographic background variables among the students participating in the study at Z College in Henan Province, China, was mainly composed of female students, rural students, junior students, non-engineering students, and non-class leader students.

2) The current status of college students' collaborative leadership at Z College in Henan Province was high.

Table 2: Descriptive Statistics of Students' Perception of Collaborative Leadership

Dimension	<i>n</i>	<i>M</i>	<i>SD</i>	Interpretation
Practical Ability	362	3.50	.68	Moderate
Communication and cooperation	362	3.43	.81	Moderate
Emotional Intelligence	362	3.59	.71	High
Leadership Consciousness	362	3.75	.71	High
Innovative Ability	362	3.67	.75	High
Total	362	3.57	.65	High

The total collaborative leadership score ($M = 3.67$, $SD = .75$) was at a high level. Therefore, students' collaborative leadership was generally high. This meant that the college students' collaborative leadership at Z College in Henan Province, China, was high.

3) The current status of college students' learning engagement at Z College in Henan Province was high.

Table 3: Descriptive Statistics of Students' Learning Engagement

Dimension	<i>n</i>	<i>M</i>	<i>SD</i>	Interpretation
Vigor	362	3.51	.56	High
Dedication	362	3.74	.46	High
Absorption	362	3.70	.45	High
Total	362	3.64	.40	High

The total learning engagement ($M = 3.64$, $SD = .40$) was also at a high level. In general, students' learning engagement at Z College in Henan Province was high. Among the three dimensions, dedication had the highest mean, whereas vigor had the lowest mean.

4) There were significant differences in college students' collaborative leadership at Z College in Henan Province, China, in terms of different demographic background variables: (1) There was a significant difference in college students' collaborative leadership by gender, with female students having significantly higher leadership than male students; (2) There was a significant difference in college students' collaborative leadership by residence, with urban

As shown in Table 6, there was a significant positive relationship between total collaborative leadership and vigor ($r = .191, p < .01$), dedication ($r = .316, p < .01$), absorption ($r = .367, p < .01$), and total learning engagement ($r = .349, p < .01$). In addition, the dimensions of collaborative leadership were significantly and positively correlated with learning engagement, including practical ability ($r = .375, p < .01$), communication and cooperation ability ($r = .285, p < .01$), emotional intelligence ($r = .361, p < .01$), leadership consciousness ($r = .288, p < .01$), and innovative ability ($r = .254, p < .01$). These findings indicated that collaborative leadership and learning engagement were significantly positively correlated.

To sum up, H3, which stated that there was a significant positive relationship between college students' collaborative leadership and learning engagement at Z College in Henan Province, China, was supported. Therefore, there was a significant positive relationship between the overall scores and various dimensions of college students' collaborative leadership and the overall scores and various dimensions of learning engagement.

4. Discussion

There were significant gender differences in college students' collaborative leadership, with female students having significantly higher leadership levels than male students. This result is consistent with the findings of Wen (2017). The research found that females were generally perceptive, good at listening and empathy, and more likely to communicate proactively and coordinate relationships in team interactions, and they could quickly unite the strength of their peers. This trait was highly consistent with the dimensions of communication and collaboration and emotional intelligence in leadership. In contrast, males tended to act independently, had relatively weaker awareness of active communication and attention to detail in team collaboration, and were less delicate in emotional expression and management (Cui & Wang, 2015).

The difference in student residences led to a significant disparity in college students'

collaborative leadership. The leadership level of urban students was significantly higher than that of rural students. This result is consistent with the findings of Zhu et al. (2024). During their growth, urban students were exposed to more opportunities such as social practice, campus activities, and volunteer services. The family and social environment they were in from an early age paid more attention to cultivating their expression ability, teamwork awareness, and sense of responsibility, which laid a good foundation for the formation of their leadership skills. In contrast, rural students had fewer opportunities to participate in various collective activities and practical projects during their growth stage. Some students were somewhat reserved in terms of expression and communication, as well as in taking the initiative to assume responsibilities. After entering university, when facing various practical and leadership scenarios, they needed some time to adapt and accumulate experience and thus temporarily lagged behind urban students in leadership performance (Zhu et al., 2024).

The differences in discipline majors led to significant variations in college students' collaborative leadership, with non-engineering students having higher leadership levels than engineering students. This result is consistent with the findings of Zhang (2021). His research found that the training objectives of non-engineering majors were more focused on students' comprehensive qualities, and the curriculum incorporated more communication and collaboration, project planning, official document writing, and related training. Students had relatively more opportunities to participate in various academic exchanges, social practices, and team projects, and were able to hone their leadership skills in practice. In contrast, engineering programs focused on enhancing professional skills. The courses were mostly theoretical teaching and practical experiments. Students' learning scenarios were relatively simple, and they focused more on mastering professional knowledge and skills training. They had fewer opportunities to participate in leadership practice and teamwork, and therefore their leadership performance was relatively weak (Wu, 2019).

The experience of serving as a class leader

had a particularly significant impact on college students' collaborative leadership skills. Students who had held leadership positions had significantly higher leadership levels than those who had not. Zhang's (2021) research indicated that students who held positions such as class leader and youth league cadre needed to frequently organize class activities, coordinate relationships with classmates, convey school notifications, and solve daily class problems. In this process, they were able to directly exercise their organizational skills, communication skills, problem-solving skills, and sense of responsibility, and gradually develop positive leadership consciousness. Students who had not held leadership positions lacked such direct practical training opportunities. The development of leadership skills mostly depended on indirect participation in campus activities, with insufficient intensity and targeting, and thus the leadership level was relatively low (Zhao & Yang, 2021).

Gender differences led to significant differences in college students' learning engagement, with female students having significantly higher levels of learning engagement than male students. This result is consistent with the findings of Lin & Huang (2018). The research found that females tended to have stronger self-discipline, be more serious and rigorous about academic tasks, be able to actively plan their study time and complete study tasks on time, and be more willing to invest time and energy in after-school self-study and research practice. At the same time, females placed relatively greater emphasis on academic performance and professional growth, were able to clearly recognize the importance of learning for personal future development, and had stronger internal motivation to learn.

Residence had a significant impact on college students' learning engagement. Urban students had a higher level of learning engagement than rural students. Yang et al., (2018) suggested that urban students had access to better educational resources during their primary and secondary school years, developed good study habits, and had strong self-study abilities. After entering university, they were able to quickly adapt to the university learning environment and actively

engage in course learning and after-school research. In addition, urban families attached relatively great importance to their children's education and were able to provide more learning support, further stimulating students' enthusiasm for learning.

Unlike collaborative leadership, there was no significant difference in college students' learning engagement by major, which was mainly due to the uniformity of the university academic system and the commonality of students' learning motivation. Lin & Huang (2018) indicated that although there were differences in training objectives and curriculum settings among different majors, students of all majors needed to complete basic courses and core professional courses and all faced the basic needs of academic assessment and professional advancement, which made the basic attitudes and degrees of engagement among students of different majors tend to be consistent.

Class leadership experience had a significant impact on college students' learning engagement. Students who had held class leadership positions had a significantly higher level of learning engagement than those who had not. This result is consistent with the findings of Zhang (2021). The research found that students who had served as class leaders needed to undertake class management-related work on the basis of completing their studies. This dual responsibility prompted them to continuously improve their self-discipline abilities, plan their time reasonably, and balance the relationship between studies and work. At the same time, the sense of responsibility brought by class leadership extended to academic work, making such students more serious and responsible in their studies and actively devoting more time and energy to improving their academic performance.

The findings suggested that there was a significant positive association between college students' collaborative leadership and its various dimensions and learning engagement, which was consistent with both the inherent logic of individual psychological and behavioral development and the growth patterns of college students during their school years. Leithwood & Seashore (2011) indicated that the college students' collaborative leadership was characterized by a

engagement, but group discrepancies remain. Males show poor self-discipline, rural students lack learning initiative, and lower-grade students have ambiguous learning objectives, impairing academic performance and professional competence development. Targeted guidance and environmental optimization can solve practical learning problems and elevate campus learning atmosphere.

Precise interventions should be implemented for diverse student groups. Time management and study planning training help male students enhance self-control, and peer pairing effectively corrects procrastination. Abundant learning resources and self-study tutoring assist rural students adapting to university study, with home-school cooperation consolidating learning motivation. Career and major orientation clarifies learning directions for freshmen and sophomores. Reasonable academic arrangements and diversified learning tasks keep upper-grade students passionate about study. Cross-major exchanges can further drive the whole student body's learning engagement.

Based on the synergy effect, promote the co-cultivation of leadership and learning engagement

Research results reveal that collaborative leadership and learning engagement interact and reinforce each other. Advanced leadership can enhance students' initiative and sustainability in learning, while sufficient learning engagement lays a solid foundation of knowledge and competence for leadership improvement. At present, colleges usually separate leadership training from learning guidance, failing to exert their linkage effect. It is necessary to establish an integrated cultivation mechanism to integrate capacity development and academic progress for students' all-round development.

Colleges should integrate the two dimensions and build a mutually empowering cultivation system. Project-based learning, group research and campus practices enable students to polish leadership skills and foster dedicated learning attitudes. Meanwhile, in-depth learning helps students accumulate expertise and optimize thinking and expression capabilities. Student

cadres are encouraged to set examples and drive peer learning and team activities to elevate both personal leadership and class learning engagement. Ordinary students can cultivate collaborative awareness and learning enthusiasm through group study and volunteer services. Furthermore, colleges can incorporate leadership literacy and learning engagement into comprehensive evaluation, guiding students to pursue coordinated development and form a virtuous cycle of mutual improvement.

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