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The Impact of Collaborative Learning Factors on Students' Involvement in Extra-Curricular Activities in Anhui Province Colleges, China

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Abstract

This study investigates the influence of collaborative learning factors—teamwork, communication, and adaptability—on students' involvement in extra-curricular activities in vocational colleges across Anhui Province, China. Recognizing the increasing importance of holistic student development in higher education, the research aims to identify how collaborative learning enhances engagement beyond the classroom. A quantitative research design was employed, utilizing structured questionnaires distributed among 379 students from four universities. The study also examined the mediating roles of students' perceived benefits and educator support in strengthening this relationship. Data were analyzed using descriptive statistics, correlation analysis, and Structural Equation Modeling (SEM). Findings revealed that teamwork ($\beta = 0.056$, $p < 0.05$), communication ($\beta = 0.138$, $p < 0.05$), and adaptability ($\beta = 0.236$, $p < 0.05$) significantly and positively affect students' participation in extra-curricular activities. Furthermore, both mediating variables—students' perceived benefits ($\beta = 0.349$, $p = 0.006$) and educator support ($\beta = 0.342$, $p = 0.003$)—were found to significantly enhance engagement outcomes. The model demonstrated excellent fit indices (CFI = 0.989, RMSEA = 0.272, $\chi^2/df = 2.2$), validating the conceptual framework. The results suggest that collaborative learning fosters essential soft skills, motivation, and institutional support, all of which contribute to holistic student growth. Overall, the study underscores the need for higher education institutions to integrate collaborative learning strategies into both academic and co-curricular contexts to cultivate adaptable, confident, and industry-ready graduates.

Keywords: Collaborative Learning, Teamwork, Communication, Adaptability, Extra-Curricular Involvement

Introduction

In recent years, China has placed an importance on developing graduates who are well-rounded. China believes that in order to make sure its youth can contribute to the nation building process in a holistic and constructive manner, these youths should strive to excel academically (Hautala & Schhmidt, 2019). But many educationists do not agree to Hautala and Schhmidt's idea. These educationists are of the opinion that for the youths to take part in the nation building process, it is not enough for them to only excel academically. Due to this, China's higher education landscape has witnessed a surge in the emphasis placed on extra-curricular activities as an integral component of the students' holistic and constructive development. By participating in extra-curricular activities, youths who graduate from colleges and universities will be able to develop into well-rounded individuals (Pang et al, 2018). However, with the demand of a heavy academic curriculum and the need to do well academically, the students were hard pressed for time to cope with their academic work, let alone participate in extra-curricular activities. Thus, many of them opt to either let go and does not participate at all, or just participate in name only. As a result of this, the researcher noted that there should be a way to 'assist' the students to really participate in the extra-curricular activities so that their involvement is more meaningful and give them many benefits (Ministry of Education, China, 2021). After some research, it was found that by adopting collaborative learning and teaching strategy, these students can participate in extra-curriculum activities. Nonetheless, a notable gap exists in our understanding of the underlying collaborative learning factors that contribute towards the engagement of the college students in their active participation in these activities (Ministry of Education, China, 2021).

Educators and policy makers must not forget that College students most often encounter various problems when participating in extra-curricular activities. Some of these problems and challenges can be regarding the many aspects like time management, choosing suitable extra-curriculum activities to be involved in, organizing activities and so on (Fei et al, 2021). These are things they need to look into, overcome and solve in order to grow and develop better (Fei et al, 2021). Without doubt, by using the correct strategy when being involved in extra-curricular activities, students or learners will be able to participate in those activities so as to enhance and enrich their regular curriculum which they are involved in during the normal school days. The extra-curriculum activities will broaden the students' educational experience which usually take place out of the normal school days (Munir & Zaheer, 2021). Nevertheless, choosing the right activity has also proven to be a challenge. China has so many extra-curriculum activities to choose from. Among the activities the students can choose from ranges from the arts to sports to leisure to self-defense and music, drama and community services to name a few. Some of these are very interesting because China is culturally different and unique. By being involved in these extra-curriculum activities, the art and culture in China can be preserved. Besides, dying art and culture in China can also be revived. The only problem here is that students in China faced a huge dilemma because there is a wide variety of activities and clubs to choose from and they need to carefully consider their interests and abilities and choose the activities that suit them the most (Fredricks, 2011; Buckley & Lee, 2021). At the same time, they also need to consider the purpose and meaning of the activity to ensure that they can gain valuable experience and skills to ensure that their participation will contribute to an added value to their course of study (Munir & Zaheer, 2021). Apart from that, the students have to contend with time constraints.

Extra-curricular involvement includes event management. Event management is the process of planning an event. This includes event planning and meetings. In today's new environment, event management does not only include in-person events but can be virtual event management as well. Virtual event management requires the same planning as in-person event but it comes with the added challenge of making sure that the content is twice as captivating. In-person events can sometimes include travelling, networking and food but virtual event relies largely on the content and how to keep the students and learners engaged (Munir & Zaheer, 2021). The organization of events covers the creation, management, planning, production, supervision and all the logistics of an event, from the idea to the start, the feedback and the achievement as well as the success or failure. Thus, event organization is also a common problem and can prove to be a huge challenge to the teachers or lecturers as well as the learners themselves (Buckley & Lee, 2021). Students may need to plan and organize activities, including determining the theme of the activity, arranging venues and resources, coordinating participants, and so on. This requires them to have good organizational skills and coordination skills to ensure the smooth running of extra-curricular activities (Applied Education System, 2022).

According to studies both in and out of China, the problems of college students' participation in extracurricular activities mainly include the following aspects (Ministry of Education, China, 2021):

1. Lack of attraction of activities: Some extracurricular activities are outdated, lack of innovation, or do not meet the interests and needs of college students. This results in a lack of attraction to the students to take part in the activities. This could have been the reasons which lead to low willingness and low participation of students.
2. Time conflict and academic pressure: College students usually face heavy academic pressure, and extracurricular activities often require a certain amount of time for the participation of the students. Besides, there is also the question of commitment on the part of the students. Therefore, time conflict has become a major problem for college students to participate in extracurricular activities. A dilemma arises in the sense that the students have to ensure that their participation in the extra-curriculum activity will have the same weight and attention as the time they put in towards their study. This means they have to have a reasonable arrangement of time to participate in extracurricular activities but at the same time not compromising the time they will allot to their studies. This is the challenge that college students need to face and solve. Afterall, it is the paper qualification that counts. In the point of view of the students, there are chance that being involved in extra-curriculum activities will cause their academic results to go down.
3. Activity organization and management problems: There are deficiencies in the organization and management of some extra-curricular activities, such as unclear and ineffective activity processes, publicity and promotion, and so on. These problems may lead to poor participation experience of students and affect their participation enthusiasm and satisfaction.
4. Lack of effective guidance and support: For some college students who are new or unfamiliar with a particular field, there is a lack of effective guidance and support. Being able to remain in the activity for a period of time can be a challenge in participating in extracurricular activities. They may need more help and guidance to fit in and participate in activities, but more often than not, they do not get enough support from either their teachers and lecturers or parents.

5. Social pressure and competition issues: College students may face social pressure and competition from their peers in certain extracurricular activities. This can cause some students to feel nervous, insecure or lack of confidence. Needless to say, this can affect their willingness to participate and perform in the extra-curriculum activities.

Leading from the research problem and the gap that has been discussed above, the researcher puts forth the research objectives. Below are the objectives which has been set for this study:

RO1: To examine the current level of collaborative learning in extra-curricular involvement among students in Anhui Province Colleges in China.

RO2: To identify the effect of collaborative learning factors (teamwork skills, communication, adaptability) on students' involvement in extra-curricular activities in Anhui Province Colleges in China.

RO3: To examine the mediating effect of students' perceived benefits, and educator support on the relation between collaborative learning factors (teamwork skills, communication, adaptability) and students' involvement in extra-curricular activities in Anhui Province Colleges in China.

Literature Review

Collaborative learning is an educational approach whereby two or more than two individuals work together to learn, find solution to problems and produce a product or output (Johnson & Johnson, 1993). Johnson & Johnson, (1993) further stated that this type of learning is based on the idea that learning is a social process. It is a process where the individual learners learn to share ideas, knowledge, skills and resources so as to enhance the understanding of concepts and go on to achieve a common solution. In collaborative, the learners will work in a team of two or more to accomplish a task or project. The team is supposed to focus on a common aim either in solving problems, clarifying concepts or coming out with a finished project. It must be remembered that during collaborative learning, members in the group must discuss, debate and explain concepts actively to the group members. This is aimed at fostering an understanding which is deeper. Therefore, it can be seen from here that collaborative learning will permit the learners to learn from the different skills and experiences that their peers have. Besides, with the debates and discussion and so on which goes on among the team members, the learners will be actively involved in the whole learning process. In another word, they will not be passively receiving information from their teachers and lecturers. Added to the above, collaborative learning will also assist learners to develop their communication skills, teamwork spirit as well as their problem-solving abilities. Collaborative learning offers numerous advantages, benefiting both the organization and individual learners (Al-Azzam et al, 2020). When individuals are given the task of working together to achieve a common goal, they are being given the opportunity to develop high-level skills (Liaw et al, 2019). Being engaged in organizing, assigning, teaching and learning, also help individuals learn to manage themselves and others effectively. This is also seen as developing a diverse range of skills and knowledge through participation in collaborative learning (Wihlborg et al, 2018). By teaching others, individuals not only enhance their current skills but also acquire new ones from fellow learners, reducing the necessity for formal training and encouraging ongoing upskilling and engagement with novel concepts. Limited contact across teams makes it challenging to foster connections and teamwork. Collaborative learning across teams, however, compels individuals to establish new connections and find new ways to collaborate and work together (Lock & Redmond. 2021). There are many more

advantages concerning collaborative learning, namely, the enhancement of leaning among the learners whereby they can learn concepts deeply and more efficiently and effectively done through interaction among their friends and also from the explanation by their friends. Apart from that, through efforts of collaboration, critical thinking and problem-solving is encouraged to take place in the learning and teaching sessions of the learners. Communication and interpersonal skills of the learners can also be enhanced through the group discussions and interactions of the learners (Keser & Ozdamli, 2012). In addition to this, Laal (2013) stated that collaborative learning can indeed make the learning process more engaging and more enjoyable for the learners. Another advantage is that collaborative learning will be able to prepare the learners for team work to take place. When the learners have completed their studies, they will be able to carry on what they have learnt and experienced and therefore collaborate in their workplace (Mandusic & Blaskovic, 2015).

To collaborate is to involve two or more people or organizations to work together for a particular purpose. On the other hand, collaboration is a partnership. It is a union. It can also be said to be the act of being together to produce or make or complete something. There are a few types of collaborations, some of which are, internal collaboration, eternal collaboration, team collaboration, open collaboration, network collaboration, technology-enabled collaboration, community collaboration and cross-departmental collaboration. The types of collaboration can also be within an organization beyond the organization. Leading on will be collaborative learning. This is the educational approach of using groups to enhance learning through working together (Khalil, 2020). It is a theory first worked on by Johnson and Johnson (1997). Collaborative learning places importance on learning through interactions within small groups to maximize the acquisition of knowledge of the individuals and collective individuals. Although at first glance, collaborative learning is related to cooperative learning and seems similar, collaborative learning is also different from cooperative learning. Johnson and Johnson (1990) stated clearly that, collaborative learning brings out and emphasizes the social aspect of the process of learning. Johnson and Johnson emphasizes on five key elements. One of them is positive interdependence. For this element, Johnson and Johnson stated that the students perceive that they can reach their goals only if their group members reach their goals as well. This is supposed to foster mutual support of all the group members. Secondly, collaborative learning will enable face-to-face promotive interaction. Here the students will actively interact with each other. They will share ideas when they explain concepts to one another thereby making sure the group members will engage in constructive dialogue when they take part in planned activities. In the case of the next element, that is, individual accountability, each and every student in the group has to be responsible for their own learning experience. This is to make sure that all the members will contribute to the activities and are therefore all of them will be held accountable for their participation in the learning activity which has been planned. The next element is known as interpersonal and small group skills. Here the students get to learn and practice skills like communication, active listening as well as conflict resolution and making decisions. This will ensure that the students will elevate their interpersonal and small group skills after actively participating in collaborative learning. Also, the educators will have to make sure that the students include and practice this element during collaborative learning. Consequently, for the next element known as group processing, the group of students who are involved in collaborative learning will occasionally reflect on their own effectiveness and efficiency. They will then see what works the most and what needs to be improved so that the collaborative process can be

enhanced. Therefore, in collaborative learning, groups of two or more learners work together to solve problems, complete tasks, or learn new concepts. From the description above, it can be seen that this approach actively engages learners to process and synthesize information and concepts, rather than using rote memorization of facts and figures (Khalil, 2020). The researcher can see that learners learn much better when working with each other on projects where they must collaborate as a group to understand the concepts being presented to them. Through defending their positions, re-framing ideas, listening to other students' viewpoints and articulating their points, learners will gain a more complete understanding as a group rather than they could as individual learners (Khalil, 2020). Collaborative learning can also occur during peer-to-peer discussions or when students meet in larger groups to discuss concepts or find solutions to problems. Similar to the idea that two or three heads are better than one, educational researchers have found that through peer instruction, students teach each other by addressing misunderstandings and clarifying misconceptions (Kozlowski et al, 2020). Research showed that educational experiences that are active, social, contextual, engaging and student-owned lead to deeper learning (Kozlowski et al, 2020).

Collaborative learning proves particularly advantageous for institutions relying on remote learners. This form of learning addresses the challenge of fostering strong connections among distantly located students (Darmuki, A & Hidayati, 2019). Research by many, indicates that implementing collaborative learning strategies leads to increased engagement and improved knowledge retention on the part of the learners (Zhang et al, 2021). The collaborative learning process enables participants to achieve higher levels of thinking, resulting in prolonged retention compared to non-collaborative settings (Hussein et al, 2020). Learners exposed to opportunities for acquiring new skills tend to exhibit higher job satisfaction. This reduces the likelihood of seeking alternative opportunities and contributes to increased productivity and work engagement (Tycho et al, 2020). Individual learners derive significant benefits from collaborative learning. Active engagement which requires the organization of thoughts, as well as the presentation of cohesive arguments, is able to define of viewpoints, and serve to enhance individual learning and knowledge retention, teamwork skills, communication, and adaptability (Ghavifekr, 2020).

There is some confusion about what the difference is between collaborative and cooperative learning. In fact, cooperative learning is a type of cooperative learning (Kozlowski et al,2020). The difference between cooperative learning and collaborative learning is that, in cooperative learning, learners are responsible for a specific section of their own learning and success, and also that of the group as a whole. The group members must use their knowledge, skills and resources to make sure that all team members understand the concepts that they are learning (Kozlowski et al, 2020). The roles and structure of cooperative learning are predefined. Cooperative learning is said to be similar to that of producing a movie or play. The members are like the cast and crew of that production. The success of the movie or play depends on all of the interconnected roles of the members supporting each other. One would notice that there is a director overseeing the project closely (Kozlowski, et al. 2020). This 'director' can be the teacher or lecturer in the beginning of any learning activity. Slowly, as the learners becomes more experienced on how collaborative learning works this 'director' can be the learner or student team leader.

On the other hand, collaborative learning promotes communication and interaction among learners (Zhang et al, 2022). It also cultivates and promotes their innovative, thinking and problem-solving skills and abilities. It has many uses and prospects in different disciplines or courses (Zheng et al, 2023). Collaborative learning during the last century is a bit different from this century (Zheng et al, 2023). Although the characteristics and aims are the same, the formation and mode of collaborative learning has changed slightly (Zheng et al, 2023). Readers would be able to guess that the difference is due to the presence of technology which is advancing more and more. Whereas, in the olden days learning occurs and can only occur through the physical face-to-face mode, technology has allowed collaboration to happen virtually. Thus, learning can now also happen remotely. In spite of that, the focus of collaborative learning is still on the learners' active participation and independent inquiry physically. Nonetheless, due to the different ways and conditions of collaborative learning during the 21st century, the effectiveness of collaborative learning is slightly different now (Zheng et al, 2023). Due to the fact that collaborative learning is slightly different, one must try to think of it in terms of roles held by different individuals within an organization. With the presence of technology, online collaborative learning has become one of the learning methods for many learners. Take for example in software development, a group of junior developers has a task to learn a new framework and then develop part of a program while using it (Omodan, 2021). Each developer therefore has their own part of the code to develop and when they meet, the parts will be combined into a whole. This is an example of collaboration.

There are many benefits of collaborative learning, both for the group as a whole and the learners as individuals (Nesrin & Kareem, 2020). Firstly, when individuals are tasked with working together to achieve a common goal, they are being given the opportunity to develop high-level skills involving higher order thinking skills as well as the development of social and emotional skills. This means that both the cognitive domain as well as the affective domain is being utilized and developed. When organizing learning experiences, assigning roles and tasks as well as being involved in the teaching and learning activities, the participants, that is the learners, are learning how to manage both themselves and others while going forward in a productive fashion. Secondly, when learners participate in collaborative learning, they are developing a wide range of skills and knowledge (Omodan, 2021). Not only will they strengthen their existing skills by having to teach and coach others, they in turn will learn new skills from other learners. This reduces the need for formal training while encouraging learners to continually up-skill and upgrade themselves in terms of known concepts and knowledge as well as skills and engage with searching for and forming new concepts and knowledge as well as skills (Omodan, 2021).

Conceptual Framework

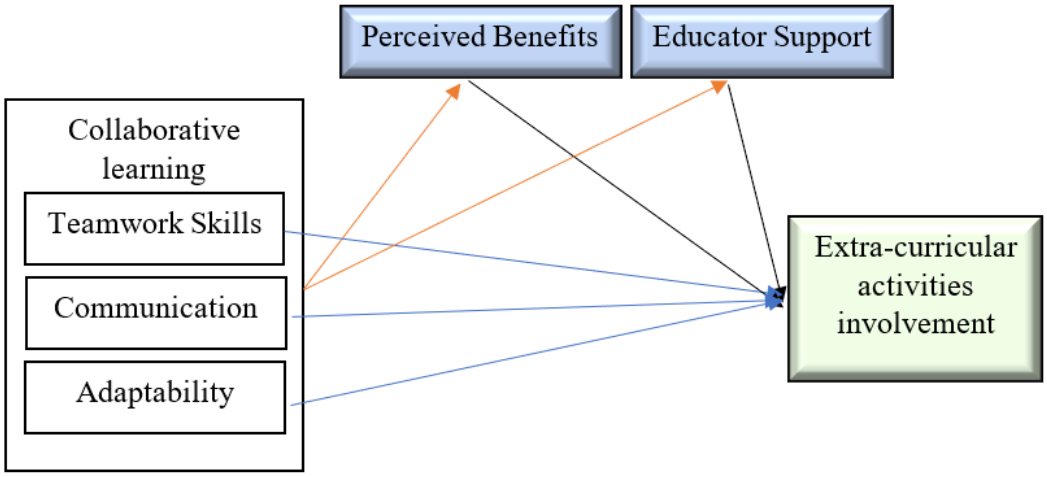

Figure 1: Conceptual Framework

Methodology

The study employed a quantitative research methodology to objectively examine the relationship between collaborative learning factors—teamwork, communication, and adaptability—and students' involvement in extracurricular activities in Anqing, China. The quantitative design enabled the researcher to collect and analyze numerical data systematically, allowing the identification of patterns and correlations between variables. Using structured questionnaires distributed online, the study emphasized objectivity, replicability, and generalizability of results. A correlational survey design was used to assess the strength and direction of relationships among variables without manipulation, making it suitable for exploring real-world educational behaviors. This design allowed for a data-driven understanding of how collaborative learning fosters extracurricular participation, aligning with the study's predictive and explanatory objectives.

The research was conducted across four universities in Anqing, a city renowned for its growing vocational education sector and emphasis on practical learning and student engagement. The institutions included Anqing Vocational and Technical College, Anqing Medical College, Anqing Teachers College, and Anhui Huangmei Opera Art Vocational College—collectively representing nearly 30,000 students. These universities offer diverse extracurricular programs, ranging from cultural and academic clubs to sports and volunteer associations, thus providing a robust context for analyzing student engagement. Using stratified random sampling, 379 students were proportionally selected to ensure representativeness across institutions. The questionnaire, developed through adaptation from validated instruments, contained 49 items divided into sections measuring demographics, collaborative learning, perceived benefits, educator support, and extracurricular involvement—each assessed using a 5-point Likert scale.

Reliability and validity testing confirmed the instrument's robustness. The pilot study, involving 50 participants and expert evaluations, yielded high internal consistency with Cronbach's Alpha values above 0.9, confirming strong reliability. Tests of normality and outlier detection demonstrated data suitability for parametric analysis. Content validity, verified through expert review, produced an average Content Validity Index (CVI) of 0.852, indicating

excellent coverage and relevance of questionnaire items. Construct validity was established through Confirmatory Factor Analysis (CFA) using Structural Equation Modeling (SEM), which confirmed an acceptable model fit with high indices (CFI = 0.989, GFI = 0.972, RMSEA < 0.05). The study's data analysis combined descriptive statistics for demographic profiling and inferential statistics (Pearson correlation and SEM) to test hypotheses, revealing meaningful insights into how collaborative learning dimensions influence student involvement in extracurricular activities, mediated by perceived benefits and educator support.

Results

The quantitative results reveal that students across four vocational colleges in Anhui Province, China, demonstrate a high level of engagement in collaborative learning and extra-curricular activities. Overall, the findings indicate strong positive perceptions of teamwork, communication, adaptability, student benefits, and educator support. Respondents consistently agreed that collaborative learning not only enhances interpersonal and communication abilities but also motivates active participation in co-curricular and extra-curricular programs. The overall mean values across variables ranged from M = 3.79 to 4.24, reflecting favorable attitudes toward collaborative practices and the belief that these experiences contribute to holistic student development.

Teamwork skills emerged as one of the strongest collaborative learning factors influencing student involvement (M = 4.24, SD = 0.76). Nearly all respondents agreed that teamwork encourages participation, conflict resolution, and shared achievement. Communication skills were also highly rated (M = 3.82, SD = 0.80), emphasizing the importance of frequent peer interaction and the use of digital tools for collaboration. Adaptability recorded a similarly high mean (M = 4.03, SD = 0.91), suggesting that students who can adjust to change, take multiple roles, and handle feedback are more actively engaged in extra-curricular activities. Together, these three variables form the core of collaborative learning factors that predict involvement.

Table 1
Summary of Descriptive Statistics for Main Variables

Variable	Mean	SD	Interpretation
Teamwork Skill	4.24	0.76	Very High
Communication Skill	3.82	0.80	High
Adaptability	4.03	0.91	Very High
Students' Perceived Benefits	4.10	0.79	Very High
Educator Support	3.81	0.91	High
Extra-Curricular Involvement	4.09	0.91	Very High

Using Structural Equation Modeling (SEM), the study confirmed that collaborative learning significantly influences students' extra-curricular participation, both directly and indirectly. As shown below, all three primary relationships were significant and positive: teamwork ($\beta = 0.056$, $p < 0.05$), communication ($\beta = 0.138$, $p < 0.05$), and adaptability ($\beta = 0.236$, $p < 0.05$). The mediating variables—students' perceived benefits ($\beta = 0.349$, $p = 0.006$) and educator support ($\beta = 0.342$, $p = 0.003$)—further strengthened these relationships, demonstrating that students' motivation and institutional guidance enhance their involvement outcomes.

Table 2
Structural Model and Mediation Results

Hypothesis	Relationship	β / Estimate	p-value	Result
H1	High level of extra-curricular involvement	—	—	Supported
H2	Teamwork → Extra-curricular	0.056	< 0.05	Supported
H3	Communication → Extra-curricular	0.138	< 0.05	Supported
H4	Adaptability → Extra-curricular	0.236	< 0.05	Supported
H5	Students' Perceived Benefits as Mediator	0.349	0.006	Supported
H6	Educator Support as Mediator	0.342	0.003	Supported

The final structural model (CFI = 0.989, RMSEA = 0.272, Chi-sq/df = 2.2) demonstrated excellent model fit and validated the theoretical framework. Results show that adaptability exerts the strongest influence on both perceived benefits and educator support, suggesting that flexible learners are more responsive to external encouragement and more engaged in extracurricular contexts. Communication also showed a moderate effect, while teamwork contributed positively but modestly to overall involvement. The findings confirm that students' soft skills enhance engagement both directly and indirectly through motivational (benefits) and institutional (support) pathways, providing strong empirical evidence for the importance of collaborative learning in vocational education.

Conclusion

This study concludes that collaborative learning plays a significant role in enhancing students' involvement in extra-curricular activities among vocational college students in Anhui Province, China. The findings revealed that teamwork, communication, and adaptability skills collectively strengthen students' engagement, motivation, and overall development. Students who demonstrate higher levels of collaboration tend to participate more actively in extra-curricular programs, benefiting academically, socially, and personally. The quantitative results showed consistently high mean scores across all constructs, confirming that collaborative learning not only improves interpersonal and problem-solving skills but also nurtures leadership, time management, and creativity — essential attributes for both academic and career success.

Moreover, the study established that students' perceived benefits and educator support significantly mediate the relationship between collaborative learning and extra-curricular involvement. This suggests that when students recognize the value of participation and receive sufficient encouragement from educators, their engagement deepens. The validated structural model confirms that adaptability is the most influential factor, followed by communication and teamwork, all contributing to stronger participation outcomes. Overall, this research highlights the importance of integrating collaborative learning strategies into both academic and co-curricular environments to cultivate well-rounded, confident, and industry-ready graduates capable of thriving in China's evolving vocational education landscape.

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