Policy Journal of Social Science Review

Online ISSN 3006-4635

Print ISSN 3006-4627

Vol. 4 No. 2 (2026)

Effect of Collaborative Learning on the Academic Achievements of Post-Graduate Students

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Abstract

The current research reviewed the impact of collaboration learning on the academic performance of post-graduate learners. The study area was Government College University Faisalabad and the Faculty of social sciences was chosen based on convenience sampling because it was feasible and relevant to the research purpose. The faculty consist of 13 departments and ten post-graduate students per department were randomly sampled in the sample making a university total of 130 respondents. The validated and reliable interview schedule was utilized in the collection of as a means of data collection that was specifically designed according to the study objectives. The analysis of the data was conducted with the help of SPSS i.e. descriptive statistics, correlation analysis, and multiple regression were computed. High mean scores of collaborative learning, student engagement, learning motivation, and critical thinking skills, as the descriptive results showed, manifest a supportive and positive learning environment. The correlation analysis found that collaborative learning had a positive and significant relationship with academic achievement, student engagement, learning motivation, and critical thinking skills. Multistage regression analysis further revealed that collaborative learning was the most powerful indicator of academic achievement followed by student engagement and critical thinking skills as well as learning motivation. It was found that all predictor variables had significant contribution to explain the variations in academic achievement. The results indicate that school-based learning, which is packaged as collaborative learning strategies, plays a key role in improving student academic performance through student engagement, motivation, and critical thinking skills. The paper indicates that problem-based and collaborative learning methods can be integrated effectively into the post-graduate education to enhance academic performance. These findings have significant implications on the educators, curriculum developers, and policymakers who would want to improve teaching and learning practices in the institutions of higher learning.

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Introduction

One of the most widely theorised instructional strategies that can result in higher-order thinking skills, knowledge construction, and academic performance is collaborative learning, which is an instructional approach allowing students to participate in intellectual work through collaborating in groups in order to solve problems or accomplish tasks (Johnson and Johnson, 2009). In the framework of higher education, the transformations of an educator-based, didactic model of pedagogy with the learner-based, constructivist model have placed collaborative learning as one of the foundations of effective teaching. The alleged advantages of it are a higher level of critical thinking, greater conceptual knowledge, and the acquisition of interpersonal skills needed to practice in the field (Qadeer 2026 & Rehman et al., 2024).

The debate on the importance of revamping the conventional paradigm of pedagogy, where emphasis is placed on the memorisation of information and passive acquisition of knowledge has been on the rise in the higher education sector in Pakistan. Researchers and practitioners have suggested that the most common paradigm of the sage on the stage of institution, where professors and students interact in a domain of hierarchical relationships and where the curriculum is based on examinations, does not prepare graduates well enough to address the challenges of the professional world of the 21 st century. As a result, collaborative instruction methods including team-based learning (TBL) and technology-based collaborative learning (TBCL) have been gaining popularity among the Pakistani universities (Asad and Qureshi, 2025 and Rehman et al., 2024).

Empirical studies carried out in the recent past in Pakistan have offered initial findings on the effectiveness of collaborative learning strategies. Research done in a higher institution of education in Sindh indicated high positive correlation between technology-mediated collaborative learning and competency-based education of students, indicating that digital knowledge sharing platforms can positively impact student participation and performance (Asad and Qureshi, 2025). In a similar study conducted in one of the universities in Karachi, there were strong positive correlations between collaborative learning, peer interaction, self-efficacy, and development of critical thinking skills in both postgraduate and undergraduate students (Qadeer, 2026).

Over the past years, institutions of higher learning have placed more importance on the student-centered method of teaching as a means of improving learning and academic performance (Leong & Ahmadi,2017). Among such methods, collaborative learning has received a lot of attention as an efficient teaching tool, which fosters active learning, collective responsibility and productive interaction among the learners. As compared to the conventional teacher-centered learning, collaborative learning promotes students to work in small groups to accomplish shared academic objectives, which promotes a deeper comprehension and knowledge building (Khalil & Hussain, 2021). Collaborative learning is based on the theory of social constructivism that states that learning is a social process that is developed during the interaction, conversation, and common experiences. Through peer discussion, problem solving, and sharing of knowledge, the students can acquire higher levels of thinking, enhancing communication skills, and learning academic understanding. Such experiences are of specific interest when learning occurs on the post-graduate level, when critical analysis, critical thinking, and high-level problem-solving are required (Sarwat et al.,2024).

The academic performance is a major measure of education in post-graduate studies. Nevertheless, a number of students have a problem of low engagement, motivation, and overdependence on passive learning styles, which could affect their performance in school. In

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
Vol. 4 No. 2 (2026)

these regards, collaborative learning provides an alternative opportunity as it forms an interactive. (Ali et al., 2021). Instructional setting that provides intellectual, motivation and engagement to students. The studies have revealed that collaborative learning has the potential to have a positive effect on the academic performance of students through participation, accountability, and deeper cognitive processing (Cheng et al., 2021). With the situation related to post-graduate education, especially in developing nations, there is an increasing demand to learn more about innovative teaching methods that can support academic success and equip learners with professional and research-focused jobs (Maria and Awan, 2019). Although collaborative learning strategies have gained more and more popularity in higher education, very few empirical studies have investigated their impact on the academic performance of post-graduate students (Pamzan et al., 2023). As such, the research will seek to investigate the impacts of collaborative learning on the academic performance of post-graduate learners. Through examining collaboration learning in relation to academic achievements, the study aims at giving empirical evidence that can be used to guide teaching and learning practices, curriculum development, and making policies in institutions of higher learning.

Methodology

For the study purpose, conveniently Government College University Faisalabad (GCUF) was chosen. Social Sciences faculty was conveniently chosen as it was easily accessible and relevant to the study goals. There are 13 academic departments in the Faculty of Social Sciences of GCUF. Simple random sampling was used to pick ten students per department creating a total sample of 130 respondents. The selected respondents were used as primary data sources and a valid and reliable interview schedule was used in order to collect the data of the study.

To examine the effect of collaborative learning on academic achievement, a multiple regression model was used. The general regression equation is:

$$AA=\beta_0 +\beta_1 (CL)+\beta_2 (SE)+\beta_3 (LM)+\beta_4 (CTS)+\varepsilon$$

Where:

AA = Academic Achievement (dependent variable)
LCL = Collaborative Learning (independent variable)
SE = Student Engagement (independent variable)
LM = Learning Motivation (independent variable)
CTS = Critical Thinking Skills (independent variable)
β_0 = Intercept of the regression model
β_1 ,β_2 ,β_3 ,β_4 = Regression coefficients representing the effect of each independent variable on academic achievement & ε = Error term

Results and Discussion

Table 1: ***Descriptive Statistics of Key Study Variables***

Variable	Mean	Std. D	Min	Max
Collaborative Learning	3.92	0.61	2.10	4.85
Academic Achievement	74.80	7.41	58	89
Student Engagement	3.88	0.65	2.20	4.90
Learning Motivation	3.95	0.59	2.30	4.80
Critical Thinking Skills	3.81	0.63	2.00	4.75

Table 1 presents the descriptive statistics, which summarize the central tendency and variability of the key study variables. The mean score for collaborative learning (M = 3.92, SD = 0.61) indicates that students perceived a high level of collaborative learning practices in their academic environment. The relatively low standard deviation suggests that students' responses

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
Vol. 4 No. 2 (2026)

were consistent, reflecting a shared experience during group activities. Academic achievement had a mean score of 74.80 (SD = 7.41), representing good academic performance among postgraduate students. The observed range (Min = 58, Max = 89) demonstrates sufficient variability in achievement levels, which is appropriate for further inferential analysis.

The mean score for student engagement (M = 3.88, SD = 0.65) indicates a high level of active involvement in learning activities, suggesting that students were intellectually, emotionally, and behaviorally engaged in their studies. The moderate variability reflects some differences in engagement levels among participants, but these differences remain within a reasonable range. Similarly, learning motivation recorded the highest mean score (M = 3.95, SD = 0.59), highlighting strong intrinsic and extrinsic motivation among students. The relatively low standard deviation indicates that most students shared similar levels of motivation, which may positively influence learning outcomes and participation in collaborative learning activities.

The mean score for critical thinking skills (M = 3.81, SD = 0.63) shows that students perceived themselves as possessing moderately high analytical and problem-solving abilities. Although slightly lower than the other variables, this result suggests that collaborative learning strategies can effectively support the development of critical thinking skills, despite some variation among students.

Table 2: ***Correlation Matrix of Major Study Variables***

Variable	CL	AA	SE	LM	CTS
Collaborative Learning (CL)	1				
Academic Achievement (AA)	0.61**	1			
Student Engagement (SE)	0.68**	0.54**	1		
Learning Motivation (LM)	0.64**	0.49**	0.71**	1	
Critical Thinking Skills (CTS)	0.59**	0.57**	0.63**	0.60**	1

The correlation table shows the correlation between collaborative learning (CL), academic achievement (AA), student engagement (SE), learning motivation (LM), and critical thinking skills (CTS). The outcomes show that the correlation between all variables is positive and strong at the level of 0.01 ($p < .01$) which implies significant relationships between the key constructs of the research. Collaborative learning has a positive relationship with student engagement (r = 0.68) and learning motivation (r = 0.64), which means that the more collaborative learning is, the more student engagement and motivation. It could imply that group classroom activities can increase the active and positive engagement of learners. The positive correlation was also significant between collaborative learning and academic achievement (r = 0.61) and it was observed that the higher the level of collaboration is experienced by the students, the higher the result of the students in academic performance. On the same note, the collaboration based learning is positively related to critical thinking competencies (r = 0.59), which could suggest that collaborative practices could support analytical and problem solving skills. Student engagement (r = 0.54), learning motivation (r = 0.49), and critical thinking skills (r = 0.57) have moderate correlation with academic achievement. This shows that academically, motivated and better critical thinking students are likely to perform better. The highest correlation in the matrix is student engagement and learning motivation (r = 0.71) which indicates a very strong relationship between these two variables. This is an indication that motivated students will be more inclined towards the activities of active learning.

Policy Journal of Social Science Review

Online ISSN 3006-4635

Print ISSN 3006-4627

Vol. 4 No. 2 (2026)

Table 3: ***Multiple Regression Analysis Predicting Academic Achievement***

Predictor Variables	B	Std. Error	Beta (β)	Sig. (p)
Constant	41.28	4.12	—	0.000
Collaborative Learning	4.92	0.88	0.46	0.000
Student Engagement	3.11	0.94	0.29	0.001
Learning Motivation	2.45	0.91	0.24	0.008
Critical Thinking Skills	2.98	1.02	0.27	0.004

The multiple regression analysis was done to determine to what degree collaborative learning, student engagement, learning motivation, and critical thinking skills are a predictor of academic achievement. The findings suggest that the regression equation is statistically significant, which proves the presence of the combined effect of the chosen predictor variables that have an influence on the description of changes in academic success among students. Team learning was found to be the best predictor of academic performance (b = 0.46, p <.001). The average coefficient (B = 4.92) means that one unit of change in collaborative learning will cause a change in the academic achievement to rise by an average of 4.92, as other factors remain constant. This result shows the importance of collaborative instructional methods in improving the academic achievement of students. Academic achievement also exhibited a positive impact which was significant on student engagement (b = 0.29, p =.001). This finding indicates that increased cognitive, emotional and behavioral engagement is related to better academic outcomes. The coefficient (B = 3.11) is not standardized meaning that its contribution to academic success is significant. Academic achievement was also established to be predicted significantly by learning motivation (b = 0.24, p =.008). This means that those students who are motivated are likely to achieve better results in their academic work since with the rise in motivation there is rise in persistence, effort as well as dedication to the learning activities. Academic achievement was also powerfully predicted by critical thinking skills (b = 0.27, p =.004). The positive correlation coefficient (B = 2.98) implies that students, who have a better analytical and problem-solving skills, attain better academic outcomes, which also promotes the development of higher-order thought skills in educational institutions.

Table 4: ***Students' Level of Agreement on Collaborative Learning Dimensions***

Dimension	Mean	Std. Deviation	Level
Peer Interaction	4.05	0.58	High
Shared Responsibility	3.89	0.61	High
Group Problem Solving	3.84	0.63	High
Knowledge Sharing	3.98	0.59	High
Collaborative Assessment	3.72	0.67	Moderate

Table 4 provides the outcomes of the questions with regard to the levels of agreement that students expressed on different dimensions of collaborative learning. On the whole, the results demonstrate that the agreement of students in terms of the efficacy of collaborative learning practices is rather high. Interaction with peers was the aspect of the peer interaction dimension that had the highest mean score (M = 4.05, SD = 0.58) since there was a substantial level of agreement that interaction with peers is an important aspect of improving understanding, communication and involvement in the learning process. The standard deviation is relatively low which implies that the perceptions of students towards peer-based learning activities are consistent. On the same note, the knowledge sharing also scored highly

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
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with a mean of (M = 3.98, SD = 0.59) meaning that the students are active in sharing ideas, resources, and understanding during collaborative work. This justifies the fact that collaborative settings promote the knowledge building process. Shared responsibility dimension also demonstrated high degree of agreement (M = 3.89, SD = 0.61), which indicates that students view group members equally responsible to the learning outcomes and completion of tasks. This is a sign of a good group and collaborative interaction. There was a high mean score (M = 3.84, SD = 0.63) in group problem solving, which showed that students appreciated the collaborative methods of solving complicated academic assignments. This result implies that collaborative learning makes it possible to discuss issues critically and make decisions together. Consequently, collaborative assessment has shown a relatively lower mean (M = 3.72, SD = 0.67) suggesting moderate level of agreement. This implies that the students are aware of the advantages of collaboration in learning activities yet they might have reservations or lack experience in the methods of the peer-based assessment. This shows the necessity of systematic evaluation guidelines and instructor support in enhancing confidence of the students in the collaborative evaluation activities.

Conclusion

The current research considered the impact of cooperative learning on the academic performance of post-graduate learners in Government College University Faisalabad. The results of the research give solid empirical evidence that group learning is a key factor in the academic performance of students. High collaborative learning, student engagement, learning motivation, and critical thinking skills were identified in the descriptive results, which reflected that the learning environment between the post-graduate students was positive and supportive. The correlation study proved that collaborative learning was positively and significantly correlated with academic performance, student engagement, learning motivation, and critical thinking skills. Such relationships indicate that there are interconnected dynamics of collaborative learning and critical academic and psychological components, which lead to student success. The close relationship between learning motivation and student engagement also reinforces the idea of importance of active engagement and intrinsic motivation in the process of learning. The multiple regression tests proved that the collaborative learning factor is the most significant predictor of academic success among the post-graduate learners even with the other variables of engagement, motivation, and critical thinking skills considered. This observation highlights the imperativeness of group teaching practices in improving post-graduate learning. Further, student engagement, motivation to learn, and critical thinking abilities were also identified to have a significant effect on academic performance, indicating that collaborative learning follows several channels to affect performance. Moreover, the dimension-wise analysis of collaborative learning demonstrated that the students agreed on peer interaction, knowledge sharing, common responsibility and group problem solving highly. Nevertheless, collaborative assessment was rated with a rather average level of consensus, which suggests that more organized and directed assessment procedures should be implemented in the collaborative learning settings. Conclusively, the research confirms that collaborative learning is a good teaching methodology that can enhance academic performance and promote the relevant competencies among post-graduate learners. The results indicate that the institutions of higher learning need to be keen to encourage collaborative learning techniques to make the students more engaged, motivated, critical thinkers and generally succeed in their studies. This study might be expanded in future research by increasing the sample size and academic disciplines, and also by incorporating longitudinal designs to enlarge and substantiate these findings.

Policy Journal of Social Science Review

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Print ISSN 3006-4627

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Recommendations

According to the study results, it is advisable that post-graduate curricula in higher education institutions should include collaborative learning strategies as a tool of ensuring academic success. The members of the faculty are supposed to be motivated and educated to develop organized group work where students can interact with each other, exercise shared responsibility, and enhance problem-solving abilities. The interactive mode of teaching should be highlighted to increase student interaction and motivation since they are decisive in the academic performance. To enhance peer-based assessment and student confidence and involvement, institutions are also encouraged to set clear guidelines and frameworks on collaborative assessment. On-going professional development initiatives among the faculty, as well as, the supportive institutional policies may further reinforce the successful adoption of collaborative learning, which will eventually result in better academic performance and acquisition of the much needed skills among the post-graduate students.

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