Enhancing Class X students' Learning in Geography through Collaborative Approach

Abstract

Collaborative learning, a dynamic and effective instructional strategy, promotes student learning through structured group activities in both face-to-face and virtual classrooms. This study examined the effectiveness of collaborative learning in improving the academic performance of 65 Class X geography students. A mixed-methods research design was employed, involving the collection and analysis of both quantitative and qualitative data. Data analysis was conducted using statistical software, including Microsoft Excel and SPSS. The findings revealed a notable decline in the failure rate among students after the implementation of collaborative learning interventions. The pre-test results indicated that 35 out of 65 students failed, while the post-test results showed a reduction to 19 failures. These results suggest that collaborative learning is an encouraging strategy for enhancing student engagement and achievement.

Key Words: Collaborative approach, learning geography, academic performance

Introduction

The Bhutan Education Blueprint 2014-2024 and the National School Curriculum Conference 2016 both emphasize the importance of research-based teaching and learning. The Blueprint recommends that all teachers conduct at least one action research study annually, while the Conference resolution calls for the promotion of a research culture in schools. This initiative is to provide opportunities to teacher to integrate theory and practice in classrooms. Moreover, it is to work collaboratively towards studying and addressing common issues in the institution. Thus, action research has emerged as a prominent tool for educational improvement in Bhutan. Its

primary goal is to address practical challenges within schools and enhance student outcomes through collaborative inquiry.

Collaborative learning creates a rich and inclusive learning environment that fosters active engagement, idea sharing, and mutual learning among students and teachers. Collaborative learning (Jacobs, 2015) fosters a learning environment that encourages deeper engagement, extensive dialogue, and profound understanding of subject matter among learners. It goes beyond superficial interactions, promoting critical thinking, problem-solving, and the development of interpersonal skills. Collaborative learning in Geography enhances gathering of ideas from various points of view to a common topic, ultimately fulfilling the obligatory goal. Hence, this study aims to examine the impact of collaborative learning strategies in enhancing students' understanding and application of geographical concepts.

Objectives of the study:

This study is to:

i. To investigate the impact of collaborative learning strategies on the academic performance in Geography.
ii. To identify the specific collaborative learning strategies in enhancing students' understanding and application of geographical concepts.
iii. To inform others about the various ways of teaching and learning Geography.

Research Hypothesis

1. Collaborative learning strategies will significantly improve the academic performance of Class X Geography students at Udzorong Central School

2. Specific collaborative learning strategies, such as group discussions, peer tutoring, and cooperative learning will enhance students' understanding and application of geographical concepts

Significance of the study

This study aims to empower Geography teachers collaborative teaching strategies to enhance student engagement and academic performance. By investigating the impact of these strategies on students' understanding and application of geographical concepts, this research will provide practical insights to help teachers create more dynamic and effective learning environments. The findings will inform the development of innovative teaching approaches that cater to diverse learning styles, ultimately leading to improved student outcomes in Geography.

Situational analysis

Udzorong Central School is a co-educational boarding school with classes from PP to Ten. Being recognized as central school, all the basic amenities are available. The school was established in 1994. It is located 65kms away from Trashigang District Administration. The school greets by a vision with "To grow into an Institute of wholesome quality Education and produce Ideal Bhutanese Citizen."

The teachers have been teaching class X Geography for the last few years. They conducted regular class tests as one of the ways to assess the impact of their teaching. Despite all their efforts, most students in their classes scored low marks. Upon observing the situation, they felt the need to change and improve their teaching. Moreover, they observed that overall academic performance of class X particularly in Arts subjects were found to be low in board examinations for last two years.

Hence, a collaborative approach was thought to be one of the best strategies that offers flexibility to group students together in the optimum manner. It offers a full range of models which can be adapted to suit whole-class, multi-team and small-team settings. However, an effective collaborative approach does not lose sight of the individual to their distinctive learning styles upon ensuring all attitudes and abilities of an individual. Accordingly, this study is intended to find the effectiveness of collaborative learning approach in learning Geography among class ten students.

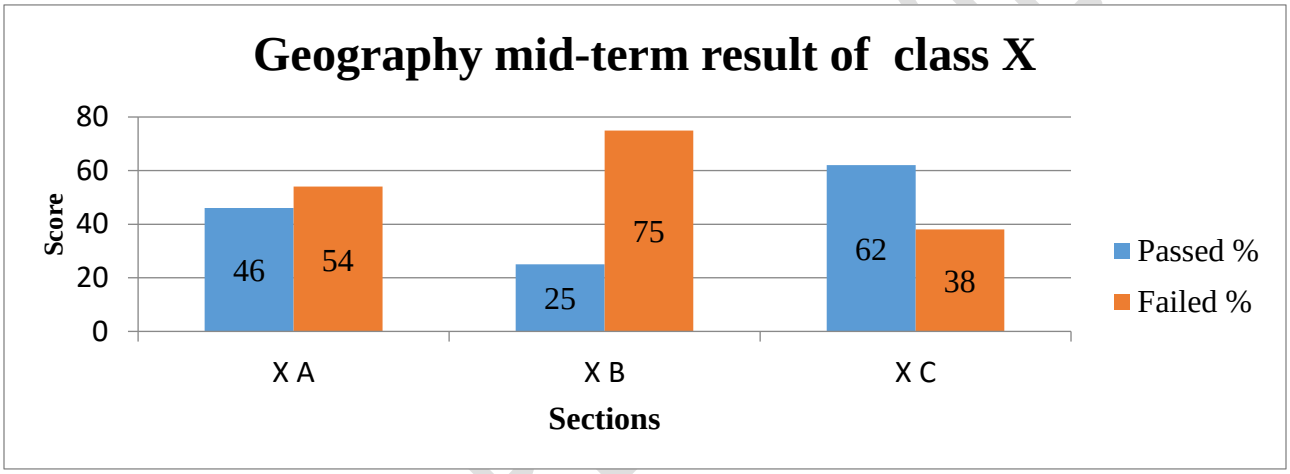

Fig. 1. Mid-term performance of class X students in Geography

In the first few years of their teaching profession, the teachers always encountered students performing low in Geography subject, in particular, which made the teachers investigate the reasons for their low performance. For this very reason, the teachers planned to conduct an action research with the hope to increase their performance level with the help of collaborative learning approaches. For the analysis part, they gathered mid-term results of class ten students in Geography. In total there are three sections of class ten in Udzorong Central School. The teachers taught all the three sections of class ten of which section "A & B" students'achievement gap is very high and most of them were under achievers while considering their mid-term paper in particular Geography. From a total of 62 students in section 'A & B' only 46% (14 students) from

section ‘A’ passed and 54% (16 students) failed. In Section B, for Geography mid-term exam, 25% students which encompass nine students passed and 75% comprising 26 students failed. This led the teachers to choose class ten “A & B” as sample. The teachers realized that there are still few areas where they can play an active role to enhance students’ learning by applying the concept of collaborative learning through group discussion, pair work and interactive learning especially in Geography class. With the use of different collaborative learning strategies, the teachers expected to bring some changes in the academic performance in Geography subject.

Literature Review:

Human history (Metin et al., 2014) is a testament to the power of collaboration. From our earliest ancestors who shared knowledge and resources to modern-day scientific advancements, cooperation has been a driving force behind human progress. The development of tools, the domestication of plants and animals, and the exploration of new frontiers are all examples of how collective effort has shaped our world. Thus, they claim that in educational system, student interaction and cooperation is neglected, most of the instructional period takes place between student and equipment and students and teachers. Cooperative learning (CL) enables students to learn better, adopt positive attitude towards each other, school, and teacher and their self-esteem improves.

The role of a teacher is not only teaching but also to develop their problem solving and lifelong learning skills. Hence, the collaborative learning approach is one of the instructional methods in which learners at various performance levels work together in small groups toward a common goal and enhance the problem-solving skills of an individual. Collaborative learning is broadly defined as “a situation in which two or more people learn or attempt to learn something together,” and more specifically as joint problem solving (Dillenbourg, 1999, p. 1).

Concept Definition

Geography (Maude, 2010) is the study of the Earth's diverse places, including their physical and human characteristics. It explores why places are unique, how they evolve over time, and their significance in the global context. He ascertains that Geographers investigate questions about the environment, culture, economy, and politics of different locations, seeking to understand their interconnections and the factors that shape them. According to Metin et al., (2014), geography explores the complex interplay between humans and the Earth. By understanding this relationship, geography empowers individuals to address global challenges and become informed citizens. Teaching geography at all grade levels fosters critical thinking and problem-solving skills, enabling students to analyze and interpret the world around them.

Thus, collaborative learning (Hulya, 2004) enhances students to develop their strategic-thinking skills, and their confidence in critical-thinking and implementation skills. The exercises also increase students' comfort level in communicating and working with their friends and enriched their independent learning skills.

The origin of the concept of “collaborative learning” is timeless and with no inquire related to human activities developed within society (Redes. A, 2016). He ascertained that collaborative learning provides a rich learning environment that fosters critical thinking, interpersonal skills, and effective teamwork. Through collaborative activities, students engage in task-oriented learning, leading to deeper understanding and enhanced academic performance.

The term cooperative learning (Richard and Rebecca, 2007) is referred to students working in teams on an assignment or project under conditions in which certain criteria are satisfied, including

that the team members be held individually accountable for the complete content of the assignment or project. According to Laal & Laal (2012), Collaborative learning is an instructional approach where students work together in small groups to achieve shared learning goals. This method emphasizes positive interdependence, individual accountability, effective communication, and group reflection. By actively engaging with peers, students develop critical thinking, problem-solving, and teamwork skills.

Collaborative learning, assists individuals to work as a team for a common purpose or mission(Keser & Özdamli, 2012). Collaborative learning is aimed for the construction and transforming of knowledge, that involves students to take almost full responsibility for working together, building knowledge together, changing and evolving together and of course, improving together.

For collaborative learning to be effective, there should be both group goals and individual accountability which ensures that every group member has learnt something. Ideally, a collaborative learning task would allow for each member to be responsible for some concept necessary to complete the task. This implies that every group member will learn their assigned concept and will be responsible for explaining/teaching this to other members of the group. It has been consistently found by many researchers that students who learn most are those who give and receive elaborated explanations about what they are learning and how they are learning it (Boxtel, Linden &Kanselaar, 2000).

However, researchers have found out that there are some obstacles in fostering collaborative learning. Cohen (1994) ascertains that students in groups may waste time in off-task behavior, engages in social loafing, in which some of the students in a group do little or none of the work, relying instead on others to do the work for them and occur unequal interactions in which some student's talk most of the time, and/or some students participate very little or not at all.

Strategies of collaborative learning

Peer tutoring and networking offer significant benefits for student academic success. Peer tutoring allows students to solidify their understanding of concepts by explaining them to others, while networking provides opportunities for knowledge sharing, problem-solving collaboration, and emotional support. Miquel and Duran (2017) support that Peer Learning Networks foster collaborative learning among students, teachers, and schools. By connecting teachers from different schools, these networks promote the use of cooperative learning strategies in classrooms, empowering educators to enhance student learning outcomes.

According to Ellis et al., (2004), the landscape of learning through discussion is rapidly evolving, driven by the proliferation of new communication technologies. Both traditional distance learning programs and traditional campus-based courses are increasingly incorporating these technologies. It was found that the students' communication skills were enhanced, encouraged students to analyze information, evaluate different perspectives, and form well-reasoned arguments.

Similarly, group presentation is another way to enhance students' learning, improve communication skills, develop real-world skill and professional preparation. Trapp, (2011) states that student presentations foster active learning by stimulating class interaction, piquing interest, and introducing diverse perspectives. This collaborative approach not only deepens students' understanding of the subject matter but also refines their communication and presentation skills. By observing their peers, students can identify areas for improvement and enhance their own delivery.

Thus, this study focuses on the significance of collaborative approach in learning Geography. Sahin (2003:p.1) defined geography as a science which examine and explain the result of natural features of environment in which human being lives, and human being's interaction with his

natural environment and as a result of this interaction human being produce social and economic activities. Teaching and learning geography has become uninteresting because teaching methods which are used in geography lesson is not qualified enough to teach students geography in our country. However, it is not a useless mass of knowledge. Teaching geography in our country seems teacher-centered method and students in the class are all passive learners. Instead of using teacher-centered method, student-centered method must be used to have effective teaching and learning of geography.

One of the best methods of teaching to keep students active is cooperative learning. In collaborative learning students work for a common goal in a small group try to help each other's learning process (Kus, Filiz &Altun, 2014). Therefore, the teacher researchers focused on this collaborative approach in teaching geography particularly class X students to help each other's learning process.

Action research question

How can a teacher help class X students to learn Geography effectively through collaborative learning strategies?

Methodology

Data Collection Tools

Research Design

In case of data collection, the data was collected in two folds that were baseline data and post line data. The teacher researchers used both qualitative and quantitative method. Students in the class were guided and observed after providing every task related to collaborative learning. In the same way, questionnaires were developed accordingly and distributed before the interventions as *pre*

and after the interventions as *post* for easy analysis. The data collected were used for analysis. The data gathering strategies used during the action research time were:

- ✓ Questionnaire
- ✓ Class test
- ✓ Interview

Target groups/sample

A total of 65 students from Class X A and B, comprising 29 male and 36 female students, participated in this study. This diverse sample provided valuable insights into the impact of collaborative learning strategies on students of different genders and abilities. By including students from both sections, the research aimed to capture a broad range of student experiences and perspectives, enhancing the generalizability of the findings.

Tools Used for Assessment

The structured questionnaire and interview sheets based on related literature were constructed and used to collect data for the study besides class tests. Sixty-five copies of the questionnaire were administered to the respondents in their classrooms and the class tests were conducted formally in the examination hall during off hours.

Statistical Techniques Used for Analysis of the Data

To interpret and analyze the data, the researchers used Statistical Package for the Social Science (SPSS) software, Microsoft Excel 2007and other primary (Student's Questionnaire) and secondary (Electronics, journals) sources as statistical techniques to analyze the data.

Data Validity and Reliability

To enhance the rigor and reliability of this research, several methodological strategies were employed. Firstly, a pilot test was conducted with a select group of participants to validate the research tools. Secondly, the research tools, findings, and documents were shared with colleagues for peer review, ensuring adherence to rigorous methodological standards. Finally, triangulation was used to authenticate findings and enhance validity. By comparing and contrasting interview data with class test results, the researcher identified patterns, inconsistencies, and potential biases, ultimately reinforcing the credibility and trustworthiness of the research.

The researchers sought permission from the school administration to conduct the study and the researchers arranged their own time to conduct the study without disturbing the regular teaching hours. The proper pre-briefing was made by the researchers to the class before making them attempt questionnaire and encouraged respondents to feel free to share their experiences. The researchers maintained all the responses shared by the respondents in confidential and anonymous.

Moreover, the researchers ensured that no participants were harmed as a result of the Action Research process and outcome as to maintain human dignity and fundamental value of the participants. Therefore, the researchers were mindful of respecting the participants of the study and the informed consent was also obtained from the research participants.

Results and discussion

Pre- data analysis:

Quantitative

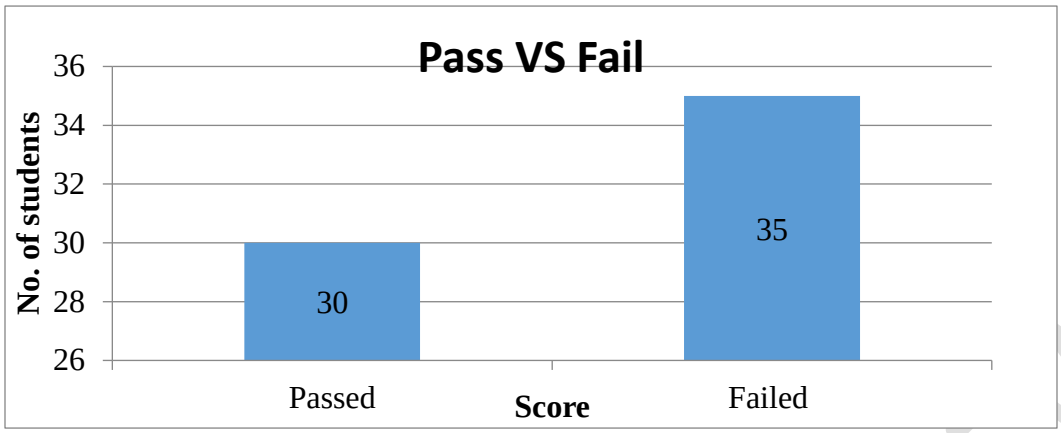

Fig. 2. Pre-test scores (Pass Vs Fail percent).

The pre line data was collected by conducting the class test before the execution of intervention strategies of collaborative learning approaches. Until the test, the teaching was solely done by the teacher using text book, board and chalk. The test was done after completion of one chapter i.e. 'The Growth of Industries' and 65 students attempted the test out of 15 marks. It was found that only 46 percent of the class got the pass mark and rest 54 percent of the class failed. So the data says that the result from this test was satisfactory and some of the students were really lagging behind. So from that data it was very clear that there is huge achievement gap between the students.

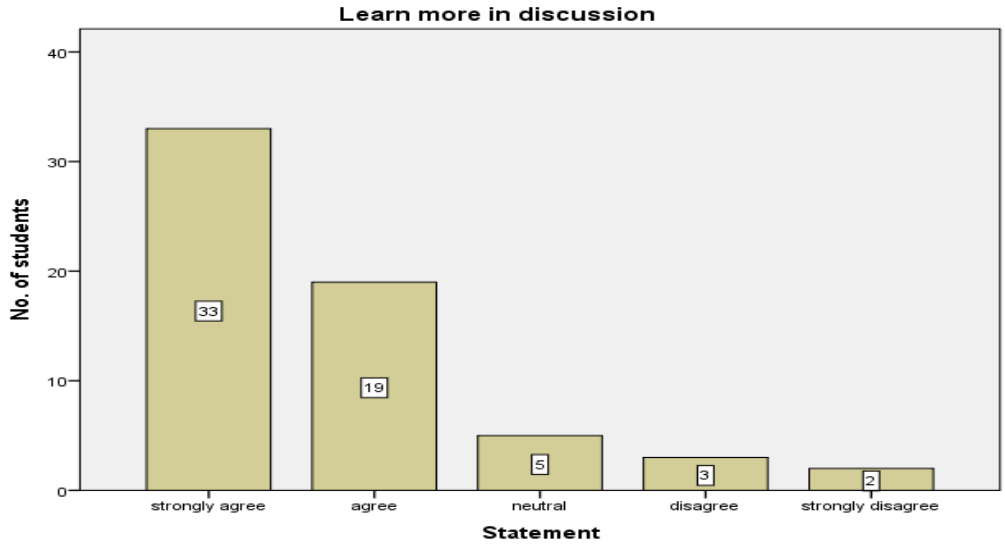

Fig. 3. Students' response on group discussion (pre-line)

In line to this, it is a graphical representation about the students' experiences regarding their way of learning, irrespective of whether in group or individual. Eight percent comprising of five students are in neutral. 53 percent composing of 33 students strongly agreed that they learn more when discussed with the friends. Similarly, 30 percent comprising of 19 students **agreed** that more learning takes place when they are in group.

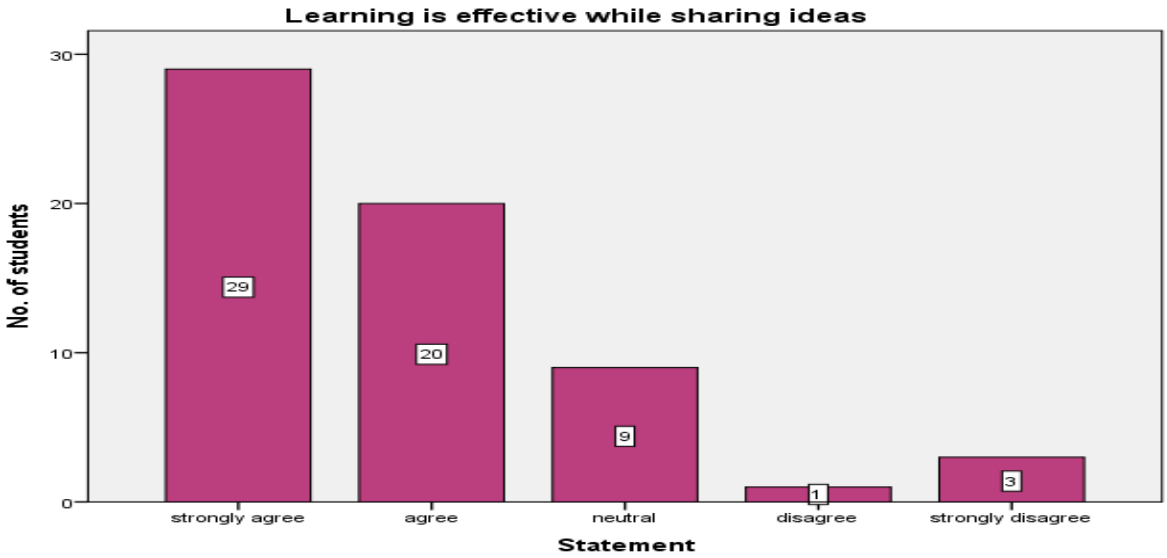

Fig. 4. Students on sharing ideas (pre-line)

It is a graphical representation that depicts whether learning through sharing ideas is effective or not. It shows that 32 percent composing of 20 students agreed that sharing ideas in a class is important for effective learning. Likewise, 46 percent consisting of 29 students strongly agreed that participation is a must for effective learning. 14 percent composing of 9 students were in neutral. 1 student disagreed that participation is important for effective learning and 3 strongly disagreed.

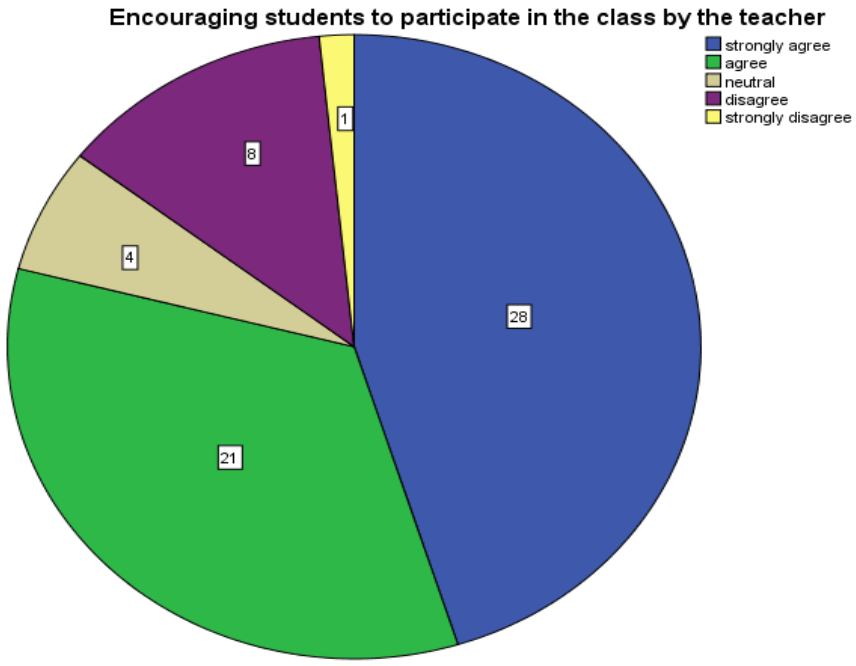

Fig.5. Students' response on teacher's encouragement on classroom activities (pre-line)

The chart shows the number of students who feels that teachers should encourage students to participate in classroom activities. It shows that 28 students comprising of 45 percent **strongly agree**d that teachers should encourage students to participate in classroom activities. 21 students encompassing 33.8 percent **agreed** that teachers should encourage students to participate in classroom activities. Likewise, 8 students **disagreed** about this statement that covers 12.9 percent. 4 students are in **neutral** covering 6 percent. Lastly 1 student strongly disagreed about it. It means that there are few students who feel that teacher should not encourage students to participate in classroom activities.

Interventions

Though, collaborative learning has been practiced in every institution, there are still some rooms for improvement. Most common means of collaborative learning is through group discussions and allowing students to work in pairs. Some of the strategies that the researchers employed to improve collaborative learning were:

- Group discussion among students with varying abilities
- Peer discussion
- Group presentation
- Conducted class tests

The teacher researchers also used learning materials such as chart papers, marker pens and cello tape for convenient and comfortable discussions. Further, the researchers explained and informed students to respect and appreciate each other's viewpoints while discussion. The researchers kept the note of the critics and obstacles faced during a collaborative teaching learning process.

Post data analysis

Quantitative

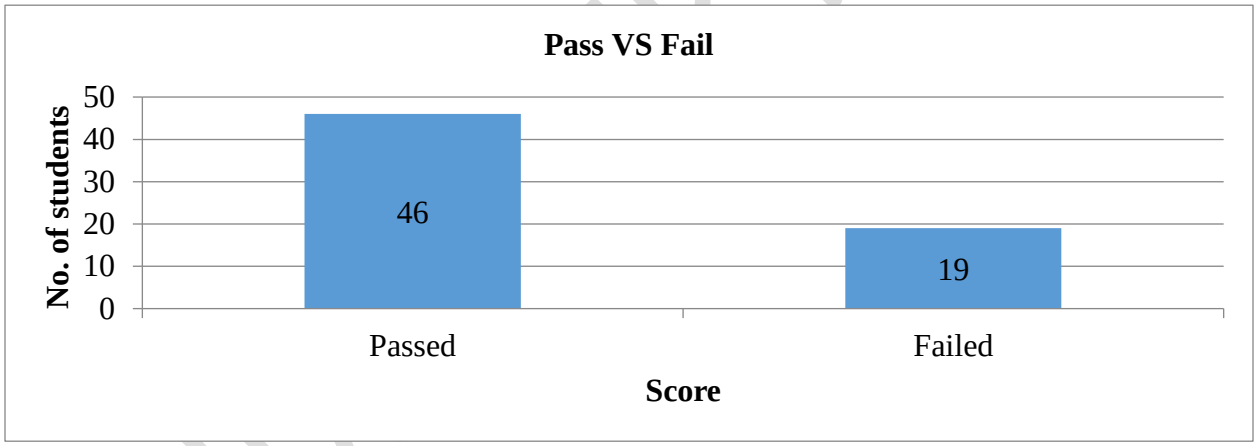

Fig. 6. Post-test scores (Pass Vs Fail percent)

In the post data, another class test was conducted on the same unit and the questions were of same level based on Bloom's taxonomy but it was different. With the execution of interventions like having group discussions, presentations and class participations, the data revealed that, 46 students secured the pass mark and only 19 students failed, thereby, d the number of failed students dropped by 25 percent. The pass percentage of the class is upgraded from 46 percent to 71 percent.

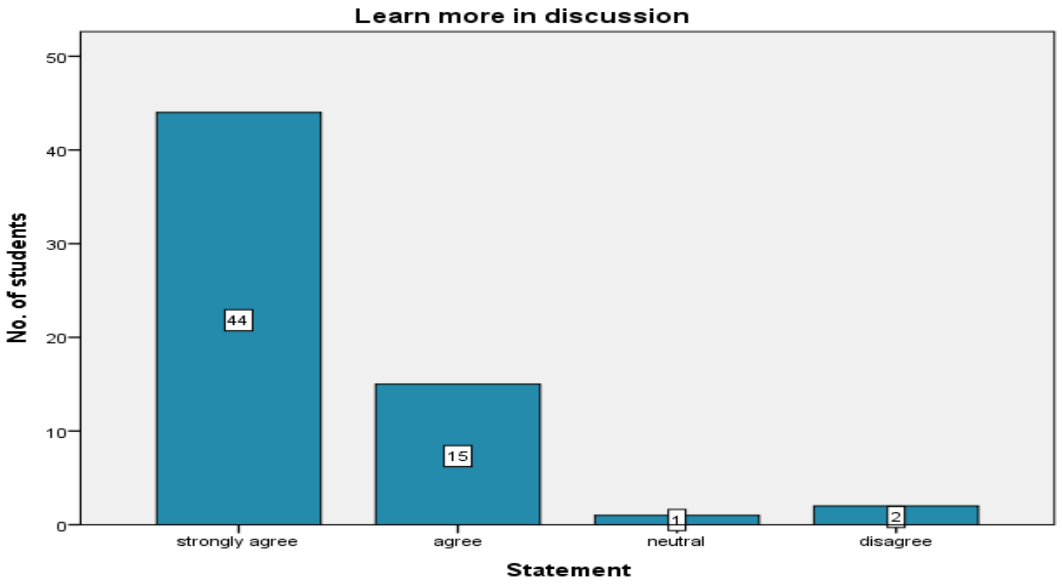

Fig. 7. Students' response on group discussion (post-line)

Apart from self–learning, some have the potential of learning more when they are with friends. This graph presents different students with their views about "discussing with friends". 24 percent have **agreed** consisting of 15 students affirms they learn more when they discuss with friends. 70.9 percent consisting of 44 students have **strongly agreed** as they learn more when they discuss with friends. Only two students **disagreed** which constitutes of only three percent and no student responded to strongly disagree. More number of students has agreed that they learn more as they discuss with their friends.

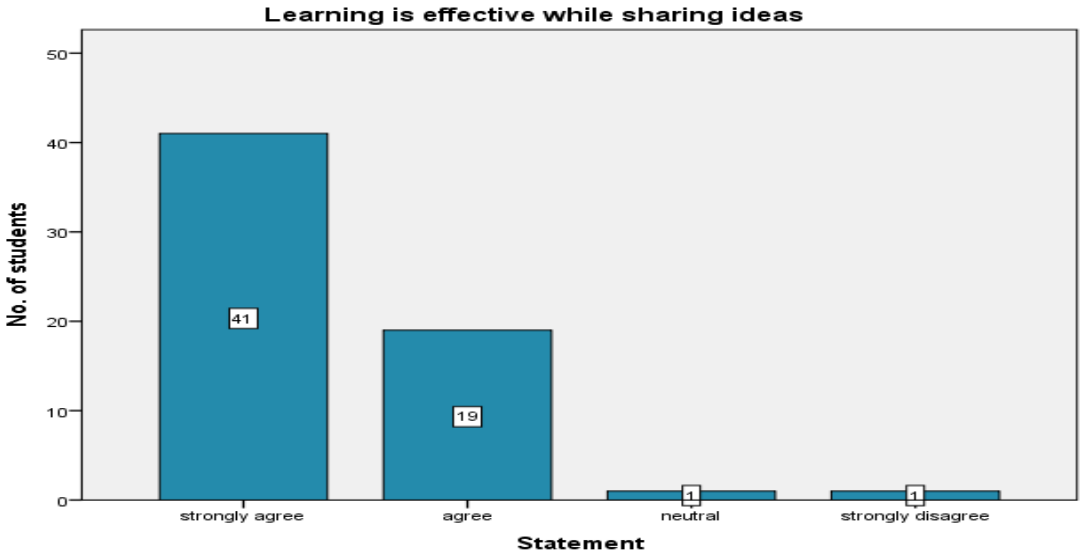

Fig. 8. Students on sharing ideas (post-line)

Participation in class is important because one can to share thoughts and opinions with the other members. Figure 8 represents students' experience through group participation and sharing ideas amongst themselves. 66 percent comprising 41 students have **strongly agreed** that learning through sharing ideas is effective. 30.6 percent comprising of 19 students **agreed** that learning through sharing ideas is effective. One student responded as **neutral**. One student has **disagreed** and no student responded to **strongly disagree**, it can be pointed out from here that most of the students learn by sharing ideas.

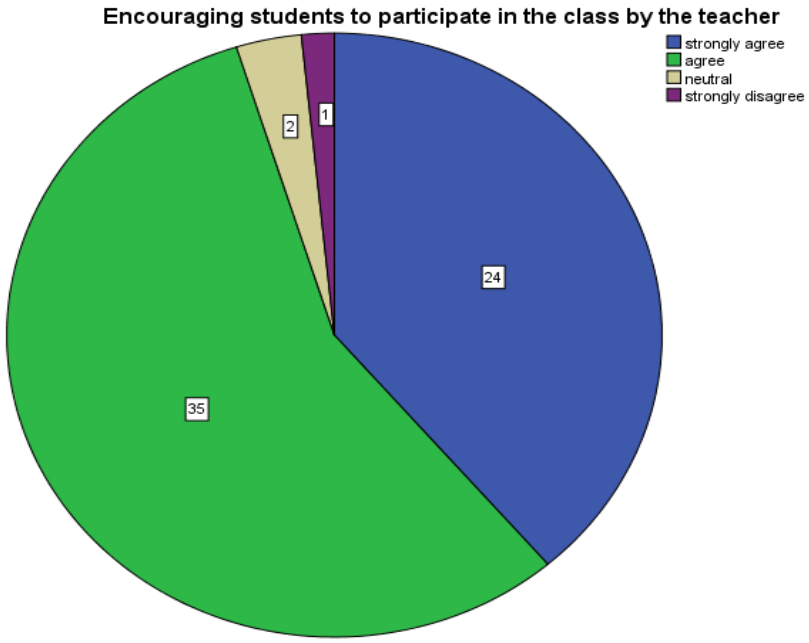

Fig. 9. Students' response on teacher's encouragement on classroom activities (post-line)

The graph shows the number of students who feels that teachers should encourage students to participate in classroom activities. It shows that 24 students comprising 38.7 percent **strongly agreed** that teachers should encourage students to participate in classroom activities. 35 students encompassing 56.5 percent **agreed** that teachers should encourage students to participate in classroom activities. Likewise, one student **strongly disagreed** about this statement. A majority of the students are therefore in favour of participating in classroom activities. Two students (covering 3 percent) are neutral about participating in classroom activities.. And, none of the students disagree about it. In Figure 9, chart, we found that majority of the students want their teacher to encourage them in classroom participation.

Comparative Test result analysis of pre line and post line data

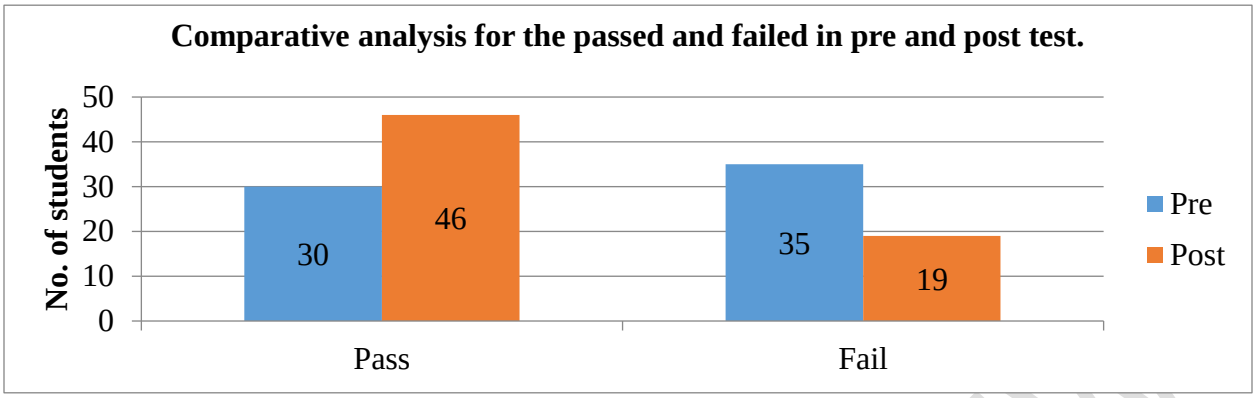

Fig. 10. Comparative Test result analysis of pre line and post line data

Interpretation

When the baseline data is compared with the post data, there is huge increase in the number of students who passed. In the pre data only 30 students secured pass marks and in the post data 46 students passed. Similarly, in terms of number of students' failure, the number of failed students dropped from 35 to 19 students. So, these two data show how the collaborative approaches like group discussions, presentation, class participation, pair work, home and expert group can improve student's learning in Geography.

Reflection (Comparative analysis on pre and post data)

Action research data were collected in two sets. The baseline data was collected in first and second week of August month, while post data was compiled in last two weeks of September month. From the observation of the data analysis and interpretation, it is obvious from the pre data collection that, students were less interested in collaborative activities such as group works, presentations and class participations. However, after executions of the interventions, there were some changes as being illustrated through chart and graphs.

From the pre data collected, it is clear that students' interest in having collaborative works were lesser as compared with the results obtained from post data. It is after the execution of intervention strategies for five weeks, a greater number of students were inspired and motivated in considering collaborative learning. The percentages of students who learn more when they discuss with friends in the pre data is 83.8 percent and have increased to 95 percent in the post data. Thus, it motivated seven students to work collaboratively in class to enhance their learning in Geography and increased the number from 52 students in pre data to 59 students in post data.

Students who consider learning through sharing ideas is effective have increased from 49 to 60 students. In the pre data 79 percent consider learning through sharing ideas is effective but after the implementation of intervention strategies i.e., group discussions, class presentations, class participation, home and expert group discussions, it has increased to 96.7 percent with 11 students motivated by collaborative learning and gaining an interest in class participation.

In case of students, who believed that teachers should encourage students to participate in classroom activities, there was only 79 percent who believed in it, but later it increased to 95 percent. With the observations from this action research, we can figure out that there was some improvement in the students' concept about collaborative learning, which facilitated them in learning Geography.

Therefore, after collection and analyzing the post data, we could see the improvement in students who participated in group discussions and learned collaboratively. From this action research, the teachers gained the idea that learners are always ready if teachers are in position to share, explain and teach them in a way that nurture them. Collaborative learning is an easiest way to learn, gather and recommence knowledge and wisdom and Geography can be taught, learnt and acquainted through collaborative learning.

Finally, the findings of this research strongly support both research hypotheses. Collaborative learning strategies have shown significant improvement in academic performance of Class X Geography students at Udzorong Central School compared to traditional teaching methods. Specifically, collaborative strategies such as group discussions, peer tutoring, and cooperative learning have enhanced students' understanding and application of geographical concepts more effectively than traditional lecture-based instruction. These findings highlight the potential of collaborative learning to transform geography education and empower students to become active and engaged learners.

Limitations

The findings are limited and are less possible to generalize about the students of whole Bhutan due to small size in the sample population. Since the research fully depended on the respondents' willingness, it was very difficult to get the required size of sample as per the expectation of researchers. There are limited resources for reference .

Recommendations

This research serves as a valuable resource for future researchers investigating the impact of collaborative learning on student outcomes in geography education. It highlights the potential benefits of this approach, including improved academic performance, enhanced communication skills, and increased student engagement. By building upon the findings of this study, future researchers can explore deeper into the specific mechanisms through which collaborative learning impacts student outcomes.

Furthermore, this research offers practical implications for geography teachers. By incorporating collaborative activities into their classrooms, teachers can create more dynamic and engaging

learning environments. These activities can foster a sense of community among students, promote critical thinking, and encourage the development of problem-solving skills. Future research should explore the impact of different types of collaborative activities, the role of teacher facilitation, and the impact of collaborative learning on students with diverse learning needs. By addressing these research questions, future studies can contribute to the development of evidence-based practices that can improve the quality of geography education for all students.

Conclusion

The implementation of varied teaching strategies is critical for enhancing student learning. One such effective strategy is the collaborative approach, which encourages students to work together in groups. This action research aimed to investigate the impact of collaborative learning on students' knowledge, communication skills, and confidence levels.

The findings of this research demonstrate the significant benefits of collaborative learning. Students who participated in group activities exhibited improved academic performance, enhanced communication skills, and increased self-confidence. Moreover, the collaborative approach fostered a sense of teamwork and cooperation among students, enabling them to learn from each other and develop a deeper understanding of the subject matter.

The results of this study suggest that the collaborative approach can be a valuable tool for educators to enhance student learning, particularly in subjects like geography. By incorporating group activities into classroom instruction, teachers can create a more engaging and effective learning environment.

Consent

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

Disclaimer (Artificial intelligence)

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