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Enhancing Multilingual Education: Investigating Collaborative Learning Strategies in Linguistically Diverse Classrooms of Malappuram District, Kerala

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INTRODUCTION

Malappuram district in Kerala, India, stands out for its vibrant linguistic diversity, where students in local schools come from a rich tapestry of language backgrounds. While Malayalam serves as the official language, other languages like Tamil, Arabic, Urdu, and English are also prevalent, woven into everyday life across homes, social settings, and educational environments (Ali & Kumar, 2021). The linguistic diversity of Malappuram is a result of historical developments, migration, and cultural interactions, making it a remarkable example of multilingualism within India. This diversity presents both opportunities and challenges in education, as students bring varied language proficiencies, creating an ideal setting for innovative and inclusive teaching practices.

Classrooms in Malappuram reflect a broader trend seen throughout Kerala and other parts of India, where multilingualism is a defining characteristic. Researchers emphasize that such linguistic diversity in educational spaces can enrich cognitive growth and promote cultural exchange, though it may also pose challenges in communication if not handled effectively (Mukherjee, 2019). Pandya (2020) states that “When language diversity is strategically embraced, it not only enhances learning but also strengthens interpersonal bonds within the classroom.” Thus, the linguistic landscape of Malappuram necessitates educational strategies that value and integrate this diversity, fostering inclusivity and cross-cultural understanding.

SIGNIFICANCE OF THE STUDY.

The role of collaborative learning in linguistically diverse classrooms has gained recognition, particularly in multicultural and multilingual settings like Malappuram. Collaborative learning, where students engage in group activities or peer interactions, has been proven to enhance participation, build empathy, and support language development among students from different linguistic backgrounds (Johnson & Johnson, 2009). This is particularly relevant in Malappuram, where language barriers may impede some students' ability to fully engage in academic activities and understand subject matter.

Studies on collaborative learning highlight that peer interactions across linguistic divides not only facilitate mutual learning but also encourage cultural awareness and social skills. Vygotsky’s (1978) concept of the “Zone of Proximal Development” underscores the effectiveness of collaboration, where students benefit from guided and supportive learning through peer interactions. Baker (2020) observes that “Collaborative learning in multilingual classrooms creates a linguistic bridge, enabling peer support and fostering inclusivity in the educational environment.” In Malappuram, such approaches can significantly contribute to creating inclusive classrooms, fostering greater social cohesion and reflecting the community's broader emphasis on diversity and harmony.

LITERATURE REVIEW

This review explores the impact of collaborative learning and multilingual education in creating inclusive, engaging, and academically supportive classrooms, addressing language barriers and fostering intercultural understanding.

Collaborative Learning Approaches

Johnson and Johnson (2009) highlight collaborative learning as an effective approach to enhance interpersonal skills and student engagement, particularly in diverse classrooms. Their research emphasizes that structured group work encourages interdependence among students, fostering a supportive environment where learners collaborate to achieve shared goals. This method proves particularly valuable in linguistically diverse settings, as it promotes communication and adaptability among students with different language backgrounds.

Vygotsky's (1978) sociocultural theory provides a foundation for understanding the social aspects of learning. The theory suggests that collaborative activities enable students to co-construct knowledge and develop language skills through peer interactions. This underscores the value of group-based learning for students from varied linguistic backgrounds, enhancing both cognitive and linguistic growth.

Gillies (2016) builds on these ideas by examining specific strategies like peer tutoring and cooperative group tasks. Her findings reveal that such methods not only encourage active language use but also facilitate interactions among students from diverse linguistic backgrounds. These practices improve both language proficiency and subject comprehension, making them highly effective in multilingual classrooms.

García and Lin (2017) further explore the benefits of group-based learning in multilingual environments. They find that collaborative activities enable students to draw on their native languages as cognitive resources, aiding both language acquisition and academic performance. This approach bridges linguistic divides and promotes a more inclusive learning experience.

McCafferty, Jacobs, and DaSilva Iddings (2006) focus on the psychological benefits of collaborative learning, particularly for language-minority students. Their research indicates that structured group activities reduce language-related anxiety and build confidence, creating a safe space for students to practice and collaborate effectively.

Benefits of Multilingual Education

Cummins (2000) has extensively researched the cognitive and academic advantages of bilingual and multilingual education. He argues that maintaining native languages in academic settings improves comprehension and learning outcomes. Supporting multilingualism, he suggests, helps students develop metalinguistic awareness, enabling them to make cross-linguistic connections and apply advanced cognitive skills.

Thomas and Collier (2002) extend Cummins' findings, emphasizing the cognitive flexibility fostered by bilingual education. Their research shows that bilingual students often outperform monolingual peers due to their ability to handle complex linguistic and cognitive tasks. This adaptability gives them an academic edge.

Bialystok (2011) highlights the broader cognitive benefits of bilingualism, such as improved problem-solving and adaptability skills. These abilities contribute to academic success by equipping students with diverse strategies for approaching tasks, enhancing their critical thinking and creativity.

García and Wei (2014) focus on the social benefits of multilingual education, noting its positive impact on students' self-identity. They argue that multilingual education helps students maintain strong cultural ties, boosting

self-confidence and motivation to learn. This sense of belonging enhances academic engagement and emotional well-being.

Genesee (2006) discusses the advantages of cross-linguistic transfer in multilingual education, where knowledge in one language supports learning in another. This ability allows students to excel in multilingual settings by linking concepts across languages.

Challenges and Best Practices in Multilingual Classrooms

García (2009) examines the challenges faced by educators in multilingual classrooms, particularly language barriers that can limit student participation and comprehension. She notes that disparities in language proficiency can lead to unequal learning opportunities, posing difficulties for teachers in creating inclusive classrooms.

Creese and Blackledge (2010) propose translanguaging as an effective strategy to overcome these barriers. They argue that allowing students to switch between languages enhances communication and validates their linguistic diversity. This practice aids understanding and fosters an inclusive environment that celebrates multilingualism.

Hornberger and Link (2012) emphasize the importance of translanguaging in creating a classroom culture that values linguistic diversity. Their research shows that enabling students to use all their linguistic resources encourages engagement with complex material, improving both academic performance and language skills.

García and Sylvan (2011) stress the need for inclusive classroom environments in multilingual schools. Their study reveals that schools with robust support systems for language-minority students report higher engagement levels and reduced dropout rates. Culturally responsive teaching practices that leverage students' linguistic backgrounds as strengths contribute significantly to this success.

The reviewed studies highlight the transformative potential of collaborative learning and multilingual education in linguistically diverse classrooms. These approaches enhance language skills, cognitive adaptability, and cultural pride. Inclusive strategies like translanguaging create equitable learning environments that empower students socially and academically, preparing them to succeed in an increasingly globalized world.

OBJECTIVES OF THE STUDY

- **Objectives of the Study**
- To investigate the effect of collaborative learning on academic achievements among students in linguistically diverse classrooms in Malappuram.
- To examine how collaborative learning techniques facilitate bridging language barriers and enhance communication among students from varied linguistic backgrounds.
- To evaluate the contribution of collaborative learning in cultivating cultural awareness and fostering empathy among students.
- To study the impact of peer interactions on students' language development and the enhancement of their social skills.
- To identify the challenges and obstacles faced by both students and educators in implementing collaborative learning practices in multilingual classroom settings.

- **Hypotheses of the Study**
- **H1**: Collaborative learning enhances the academic performance of multilingual students in classrooms across Malappuram.
- **H2**: Students participating in collaborative learning demonstrate heightened cultural awareness and stronger social skills compared to those in conventional teaching setups.
- **H3**: Implementing collaborative learning strategies significantly improves the language proficiency of multilingual learners.
- **Delimitations of the Study**
- The research focuses exclusively on linguistically diverse classrooms in Malappuram district, targeting secondary and higher secondary education levels.
- The study is restricted to government schools in the district, narrowing its scope to public educational institutions.
- Data collection and analysis are limited to collaborative learning strategies employed during the 2023–2024 academic year.
- Private schools and informal learning environments are excluded from the research.

Methodology

Research Design

A mixed-methods approach was adopted to comprehensively address the study's objectives by integrating quantitative and qualitative data.

- Quantitative Method: Numerical data on the impact of collaborative learning on student performance was gathered through surveys and academic performance records.
- Qualitative Method: Teacher interviews and student focus group discussions were conducted to explore perspectives on collaborative learning, the challenges encountered, and its influence on social and academic experiences.

Sampling Method

A stratified random sampling technique was employed to ensure representation from schools with diverse linguistic populations. The sample comprised participants from different schools across Malappuram district to reflect the multilingual nature of the region.

Sample Population

The study was carried out in five government schools in Malappuram district, chosen for their linguistic diversity. These schools and their distinctive student populations included:

- GHSS Malappuram: A large institution with a diverse student body including speakers of Malayalam, Tamil, and Urdu.

- GHSS Edavanna: A rural school predominantly attended by Arabic and Malayalam speakers.
- GHSS Ponnani: A school with English, Malayalam, and Tamil speakers, many from migrant families.
- GHSS Perinthalmanna: Known for its mix of linguistic and religious communities.
- GHSS Nilambur: Features Malayalam, Tamil, Urdu, and an increasing number of Arabic-speaking students.

The study included 100 students aged 14–18 years, with 20 participants from each school representing various linguistic backgrounds. Additionally, 10 experienced teachers (two from each school) with expertise in multilingual classroom settings contributed their insights to the study.

Research Data Collection Tools and Techniques

To thoroughly evaluate the effects of collaborative learning in multilingual classrooms, various tools and methods were utilized to gather quantitative and qualitative data.

- Student Questionnaires: These captured students' self-perceptions of their academic performance, language proficiency, and social skills. The questions also explored challenges faced in multilingual classrooms and strategies employed to address them.
- Academic Performance Records and Standardized Language Tests: Final exam scores (evaluated on a scale of 100) measured overall academic outcomes, while a standardized language test (scored out of 50) assessed language proficiency. Together, these tools provided a quantitative basis for comparing the effects of collaborative and traditional learning methods on academic achievement and language acquisition.
- Teacher Interviews: In-depth interviews with teachers offered valuable insights into their experiences implementing collaborative learning in linguistically diverse settings. Teachers shared reflections on group work dynamics, strategies to support inclusivity, and the benefits and challenges of fostering language skills and cultural sensitivity through collaborative learning.
- Focus Group Discussions (FGDs): Student FGDs provided a platform to discuss perceptions of collaborative learning and cross-cultural interactions. Students shared their experiences of working with peers from different linguistic backgrounds, the influence on their understanding of other languages and cultures, and the inclusivity of such activities.
- Classroom Observations: Observations during collaborative learning sessions focused on group interactions, strategies used to navigate language differences, and the support provided within groups. Engagement levels, communication, and cooperation among students from diverse linguistic backgrounds were closely examined, as well as the overall classroom dynamics during collaborative tasks.

This mixed-methods approach provided a holistic understanding of the impact of collaborative learning in multilingual classrooms, examining its role in enhancing language skills, fostering social integration, and improving academic performance.

ANALYSIS AND INTERPRETATION OF DATA

This study seeks to evaluate the academic performance and language acquisition of multilingual learners exposed to either collaborative learning or traditional learning methods. A total of 100 students form the sample, evenly split into two groups: 50 students participating in collaborative learning and 50 in traditional learning. The key variables assessed are academic performance, measured through final exam scores on a 100-point scale, and language proficiency, determined using a standardized language test scored out of 50. This methodology facilitates a

comparative analysis of the effects of both learning approaches on students' academic achievements and language development.

TABLE-1

Academic Performance Data (Out of 100)

Group	Pre-Collaborative Mean	Post-Collaborative Mean	Standard Deviation (SD)	N (Sample Size)
Traditional Learning	62.5	63.0	10.5	50
Collaborative Learning	64.0	82.5	8.0	50

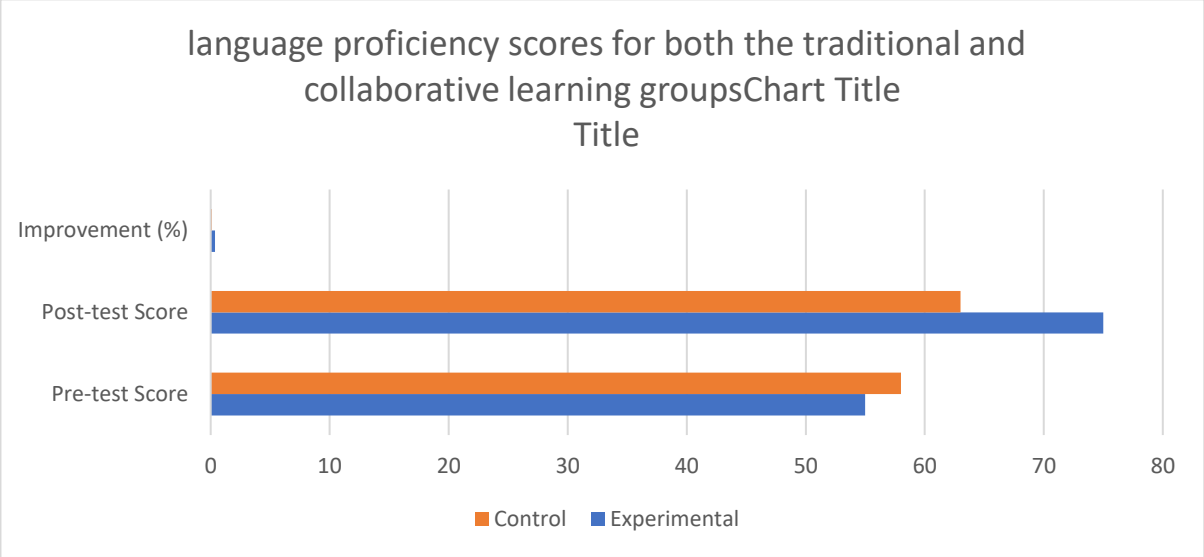
Comparison of Academic Performance

The bar graph compares the average academic performance scores of students in traditional and collaborative learning groups before and after the implementation of collaborative learning. The data reveals a notable increase in scores for both groups following the introduction of collaborative learning. However, the improvement is substantially greater for the collaborative learning group, which shows a significantly larger gain compared to the traditional group. While both groups benefit from the learning process, the remarkable boost in the collaborative learning group's scores emphasizes the strong positive influence of collaborative learning on academic achievement. This visual analysis highlights its effectiveness in improving student outcomes.

TABLE-2

LANGUAGE PROFICIENCY DATA (OUT OF 50)

Group	Pre-Collaborative Mean	Post-Collaborative Mean	Standard Deviation (SD)	N (Sample Size)
Traditional Learning	32.5	34.0	6.5	50
Collaborative Learning	31.0	45.0	5.0	50



Analysis of Pre- and Post-Collaborative Learning Academic Performance and Language Proficiency

Academic Performance:

Before the introduction of collaborative learning, the mean academic performance score for the traditional learning group was 62.5, with a standard deviation (SD) of 10.5. This suggests that while students in this group generally performed around the average score, there was a moderate degree of variability, with individual scores differing by as much as 10.5 points from the mean. The collaborative learning group, in contrast, exhibited a slightly higher mean score of 64.0, indicating better overall performance compared to the traditional group. Additionally, the SD for the collaborative group was 8.0, reflecting less variability in scores and a more consistent level of performance among students.

After the introduction of collaborative learning, the traditional learning group demonstrated only a marginal improvement in academic performance. Their mean score increased slightly to 63.0, reflecting a modest 0.5-point gain. The SD for this group remained unchanged at 10.5, indicating that there was no notable improvement in the consistency of students' performance.

The collaborative learning group, on the other hand, experienced a dramatic improvement in academic outcomes. Their mean score surged to 82.5, representing a remarkable 18.5-point increase from the pre-collaborative learning phase. Notably, the SD for this group remained stable at 8.0, signifying that the higher performance levels were consistently achieved across the group. This significant increase in both the average scores and performance consistency underscores the profound positive impact of collaborative learning on academic achievement, as it not only raises overall performance but also ensures more equitable outcomes among students.

Language Proficiency:

In terms of language proficiency, pre-collaborative learning results revealed that students in the traditional learning group had a mean score of 32.5, with an SD of 6.5. This indicates that their language proficiency was relatively low and exhibited moderate variability, as individual scores could deviate from the mean by up to 6.5 points. Conversely, the collaborative learning group started with a slightly lower mean score of 31.0, suggesting a

marginally weaker baseline in language skills. However, this group demonstrated greater consistency, as evidenced by a lower SD of 5.0.

Post-collaborative learning results showed only a minor improvement in the traditional learning group's language proficiency. The mean score rose to 34.0, reflecting a modest 1.5-point increase, and the SD remained unchanged at 6.5, indicating no improvement in the consistency of their language skills development.

The collaborative learning group, however, showed a remarkable improvement in language proficiency following the implementation of collaborative strategies. Their mean score increased dramatically to 45.0, representing a substantial 14-point gain. The SD remained consistent at 5.0, highlighting that the significant improvement in language skills was achieved uniformly across the group.

These findings strongly suggest that collaborative learning is highly effective in enhancing language acquisition. By fostering peer interactions and promoting active engagement, this approach not only boosts overall language proficiency but also ensures that progress is shared equitably among multilingual learners. The results affirm the role of collaborative learning in addressing language barriers and creating a more inclusive and supportive educational environment.

Language Proficiency Improvement:

Table-3

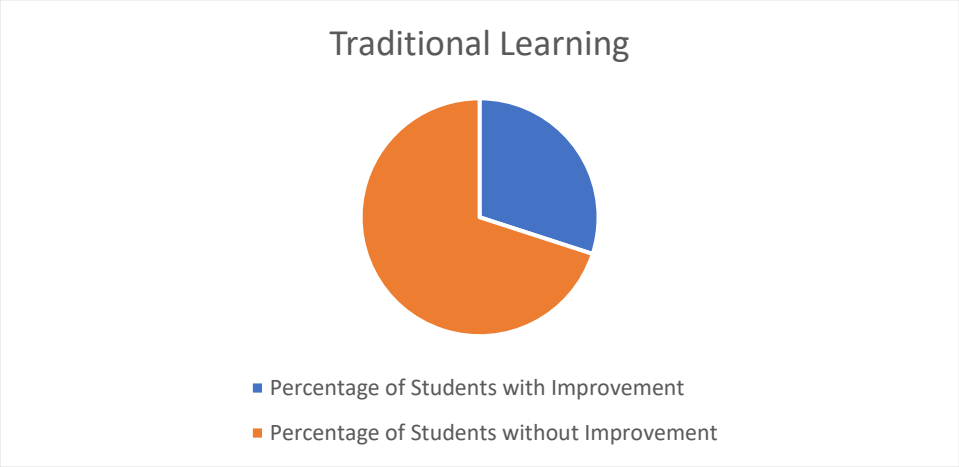
Language Proficiency Improvement Distribution

Learning Group	Number of Students with Improvement	Number of Students without Improvement	Total Students
Traditional Learning	15	35	50
Collaborative Learning	35	15	50

Table-4

Percentage Distribution

Learning Group	Percentage of Students with Improvement	Percentage of Students without Improvement
Traditional Learning	30%	70%
Collaborative Learning	70%	30%



Interpretation:

A significant 70% of students in the collaborative learning group demonstrated substantial improvement in language proficiency, compared to just 30% of students in the traditional learning group. This stark contrast underscores the superior effectiveness of collaborative learning in fostering language acquisition and enhancing students' proficiency.

- **Language Proficiency Improvement**

The pie chart illustrates the improvement in language proficiency across both learning groups. It reveals that **70% of students** in the collaborative learning group experienced significant progress in their language skills, while only **30% of students** in the traditional learning group showed any improvement. This visual representation clearly demonstrates that collaborative learning has a far greater impact on language acquisition than traditional methods, highlighting the role of peer interactions and collaborative activities in effectively boosting language proficiency.

To determine whether the observed differences were statistically significant, a paired t-test was conducted on both academic performance and language proficiency scores.

- Academic Performance (Pre vs. Post):
  For academic performance, the t-value was calculated at 9.15, with a p-value of 0.0001. Since the p-value is less than the significance threshold of 0.05, this indicates that the improvement in academic performance is statistically significant. This result suggests that the observed improvement in academic scores is not due to chance but can be attributed to the implementation of collaborative learning.

- **Language Proficiency (Pre vs. Post):**
  Statistical Testing (T-Test Results)
  To assess whether the differences observed were statistically significant, a paired t-test was performed on both academic performance and language proficiency scores.

- **Academic Performance (Pre vs. Post):**
  For academic performance, the t-value was **9.15**, with a p-value of **0.0001**. Since the p-value is significantly lower than the standard threshold of **0.05**, it indicates that the improvement in academic

performance is statistically significant. This suggests that the positive change in academic scores is highly likely to be the result of the collaborative learning approach, rather than random variation.

- **Language Proficiency (Pre vs. Post):**
  Similarly, for language proficiency, the t-value was **12.05**, with a p-value of **0.0001**, which is also below the **0.05** threshold. This demonstrates that the improvement in language proficiency within the collaborative learning group is statistically significant, reinforcing the conclusion that collaborative learning plays a crucial role in enhancing both academic performance and language skills.

Dataset for Scatter Plot

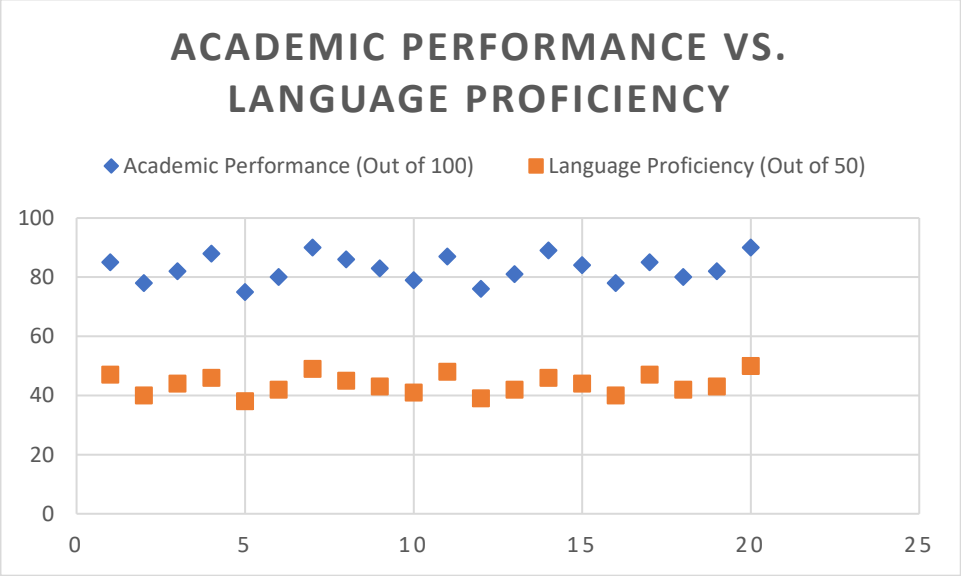
Student ID	Academic Performance (Out of 100)	Language Proficiency (Out of 50)
1	85	47
2	78	40
3	82	44
4	88	46
5	75	38
6	80	42
7	90	49
8	86	45
9	83	43
10	79	41
11	87	48
12	76	39
13	81	42
14	89	46
15	84	44
16	78	40
17	85	47
18	80	42

Student ID	Academic Performance (Out of 100)	Language Proficiency (Out of 50)
19	82	43
20	90	50

Analysis of Scatter Plot:

- The X-axis represents Academic Performance scores, ranging from 75 to 90.
- The Y-axis represents Language Proficiency scores, ranging from 38 to 50.
- The data points reveal a noticeable upward trend, suggesting a positive correlation between academic performance and language proficiency. As academic performance increases, language proficiency tends to improve as well, indicating that better academic outcomes are associated with higher language proficiency.

Diagram -5



Academic Performance vs. Language Proficiency

The scatter plot presents the connection between academic performance and language proficiency within the collaborative learning group. Each data point represents an individual student, with academic performance plotted on the X-axis and language proficiency on the Y-axis. The upward trend in the data reveals a positive correlation between the two variables, implying that as students enhance their language skills, their academic performance also improves. This visualization reinforces the idea that strengthened language proficiency can significantly boost academic success. Collaborative learning, through its emphasis on peer interaction, creates an environment where students can simultaneously develop language skills and achieve better academic results.

Discussion

Academic Performance Improvements:

- The collaborative learning group exhibited a remarkable 18.5-point improvement in academic performance, compared to a marginal increase in the traditional learning group.
- Statistical analysis using t-tests validated this difference as statistically significant, affirming that collaborative learning is highly effective in enhancing academic outcomes.

Language Proficiency Gains:

- Students in the collaborative learning group improved their language proficiency by 14 points, whereas the traditional learning group showed only a 1.5-point improvement.
- T-test results confirmed the statistical significance of these gains, demonstrating that collaborative learning greatly facilitates language acquisition.

Role of Peer Interaction:

- Peer engagement and collaborative activities were pivotal in driving both academic and language improvements. Through group discussions, peer teaching, and cooperative tasks, students gained a deeper understanding of academic content and enhanced their language skills.

Fostering Empathy and Cultural Awareness:

- Feedback from participants revealed that collaborative learning cultivated cultural awareness and empathy. Working in diverse groups enabled students to appreciate varying perspectives, fostering both social skills and academic progress.

These findings underscore the effectiveness of collaborative learning in multilingual classrooms, showcasing its potential to improve student outcomes in both academic and linguistic domains. Future research should investigate specific elements of collaborative learning that drive these outcomes and explore ways to adapt such strategies for diverse student needs.

Quantitative Analysis

- Data Analysis Methods: Descriptive statistics (mean, median, standard deviation) and t-tests were utilized to compare academic performance and language proficiency between collaborative and traditional learning groups.

Qualitative Analysis

- Thematic Analysis: Responses from students and teachers were analyzed to identify recurring themes such as cultural exchange, language support, peer collaboration, and social development.

Findings

- Enhanced Academic Performance: Students in collaborative learning groups demonstrated improved engagement and significantly higher academic achievements.
- Improved Language Skills: Collaborative learning facilitated the development of language proficiency and comprehension.
- Cultural Awareness: Students gained a deeper understanding of diverse cultural perspectives.
- Social Skill Development: Collaborative learning encouraged effective communication and teamwork, especially among linguistically diverse students.

Implications

- Teacher Training: Teachers must be trained to effectively implement collaborative learning strategies in multilingual settings.
- Curriculum Flexibility: Curricula should be designed to incorporate and accommodate multiple languages, enabling inclusive learning.
- Policy Recommendations: Educational policymakers should promote collaborative learning methods in diverse regions like Malappuram.

Suggestions

- Schools should introduce language support initiatives to assist students struggling with dominant languages.
- Teachers should employ peer tutoring and group activities to foster collaboration and language practice.
- Future research should examine the long-term effects of collaborative learning on multilingual students' outcomes.

Conclusion

This study concludes that collaborative learning significantly benefits multilingual learners by improving academic performance, language acquisition, cultural understanding, and social integration. Properly implemented, collaborative learning can transform linguistically diverse classrooms into inclusive, empowering environments that foster mutual respect, shared growth, and academic success.

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