

The Impact of Gender and Inclusive Pedagogies on Student Participation and Learning Achievement at Secondary School During the Pandemic and Beyond

-A cross-cultural experimental study being implemented in Bangladesh, Nepal, Bhutan, Timor-Leste and Vietnam since May 01, 2021 to November 2023



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I. Introduction and background of the project

1.1. Introduction

In the landscape of contemporary education, fostering inclusive learning environments that cater to diverse student populations has emerged as a pivotal concern for educators and policymakers alike. Within this discourse, the roles of gender and inclusive pedagogies have garnered significant attention due to their profound implications for student participation and learning achievement. The adoption of inclusive pedagogical approaches, which prioritize equity, diversity, and accessibility, has been heralded as a means to mitigate disparities in educational attainment and promote holistic student development.

Understanding the importance of inclusive education, Vietnam is committed to fostering an educational environment that promotes inclusivity and ensures equitable access to quality education for all its citizens. In pursuit of this goal, significant efforts have been made to reform the education system, with particular emphasis on curriculum development and the implementation of supportive laws and policies. The foundation of inclusive education in Vietnam is underscored by the adoption of a new curriculum framework characterized by five core qualities/dispositions and ten core competencies that help students develop all their potential capacities.

Legislation plays a pivotal role in advancing inclusive education, with several key laws and policies enacted to support this endeavor. These include the Convention on the Rights of Persons with Disabilities, Law No. 51/2010/QH12 on Persons with Disabilities, the Law of Education, the Law on Children, and Joint Circular No. 42, which provides guidance on admission procedures, enrollment processes, and tuition fee exemptions and reductions. Additionally, the National Action Plan to Support People with Disabilities underscores Vietnam's commitment to creating an inclusive educational landscape.

Significant milestones mark Vietnam's journey towards enhancing inclusive education. In 2006, Decision No. 23 outlined regulations concerning the responsibilities associated with inclusive education. Subsequently, in 2010, the enactment of the law on disabilities mandated educational support for children with disabilities, marking a crucial step towards inclusive education. The year 2018 witnessed the formulation of a comprehensive National Plan outlining specific goals and activities aimed at promoting inclusive education. Moreover, the 2019 Law of Education explicitly identifies inclusive education as the preferred mode of education, signaling a strong commitment to its implementation.

Despite these strides, challenges persist, particularly in the realm of teacher training for inclusive education. While efforts have been made to address this issue, training programs in this area remain inadequate, as evidenced by existing challenges highlighted in various reports and assessments.

In alignment with its educational ethos, Vietnam endeavors to promote students' full potential regardless of their circumstances or conditions. This commitment extends to various marginalized groups, including ethnic minority children, those facing socio-economic disadvantages, out-of-school children, and gifted students. By prioritizing inclusive education, Vietnam aims to create an educational landscape that nurtures diversity, fosters equity, and empowers all learners to thrive.

Understanding the intricate interplay between gender dynamics and pedagogical practices is essential for cultivating environments conducive to student success. In response, educators have increasingly turned to inclusive pedagogies as a means of fostering equitable and empowering learning environments. Inclusive pedagogy encompasses a range of strategies and approaches designed to accommodate diverse backgrounds, abilities, and learning styles while challenging inequities and promoting social justice within educational spaces. By centering principles of accessibility, empathy, and collaboration, inclusive pedagogies aim to cultivate a sense of belonging and agency among all students, thereby enhancing their engagement and academic achievement.

Hence, acknowledging the imperative for engagement in educational reform, the Vietnam National Institute of Educational Sciences (VNIES), in collaboration with the Institute of Education and Research (IER) at the University of Dhaka, Bangladesh (as the lead institution), Tribhuvan University in Nepal, and Timor Lorosa'e National University (UNTL) in Timor-Leste, undertook this study to support the Gender and Inclusion Pedagogy (GIP) project targeting secondary school educators. Funded by the International Development Research Centre (IDRC) of Canada, through the Global Partnership for Education Knowledge and Innovation Exchange (GPE-KIX), the research aimed to develop and implement an evidence-based professional development program for teachers, focusing on gender and inclusion.

The primary objective of the study was to enhance teachers' competencies in addressing equity issues, with the goal of improving student participation and learning achievements. Employing an experimental design, the research evaluated the impact of GIP interventions on participating educators. Anticipated outcomes included favorable shifts in teachers' attitudes, increased self-efficacy, adoption of inclusive teaching methodologies, and consequent improvements in student engagement and academic outcomes. Furthermore, the project aspired to catalyze systemic change at a national level, transcending the boundaries of individual classrooms.

The insights gleaned from this study are poised to empower pertinent stakeholders to initiate dialogues and formulate policies and strategies geared towards fostering inclusivity in education. By disseminating these findings, the study aims to contribute to a broader discourse on educational equity and serve as a catalyst for transformative change within the educational landscape.

1.2. This study

1.2.1. Study aims

The aim of this study was to evaluate the effects of Gender and Inclusive Pedagogy (GIP) approaches on the participation and learning achievement of Grade VII and IX students in secondary schools, particularly amid the challenges presented by the COVID-19 pandemic and beyond. Specific objectives included identifying changes in teachers' attitudes, efficacy, and practices regarding gender and inclusive pedagogy, assessing the impact of GIP approaches on student participation and learning achievement during and after the pandemic, examining these effects across diverse gender and background contexts, and identifying sustainable mechanisms for implementing GIP approaches at national and regional levels.

1.2.2. Study frameworks

The study was grounded in the theoretical frameworks of Gender and Inclusive Pedagogy, which were developed to ensure equitable student participation and improved learning outcomes. Drawing upon successful models from Bangladesh, Bhutan, Nepal, and Vietnam, the GIP approach integrated various gender and inclusion-related components tailored to address the unique contexts of each country. Comprising three primary components—School Culture, Classroom, and Collaboration and Networking—the GIP approach aimed to cultivate an inclusive educational environment by engaging stakeholders, enhancing teachers' inclusive classroom practices, and fostering collaboration at regional and international levels. The GIP approach was underpinned by two core concepts: a gender transformative strategy and inclusive pedagogy. While the gender transformative strategy aimed to promote equity, empowerment, and the redefinition of gender roles, inclusive pedagogy sought to enhance participation and learning achievement for all students, regardless of their backgrounds. By integrating these strategies, the GIP approach aimed to drive inclusive reforms and foster gender equity, ultimately contributing to holistic student development.

The aim of this study was to assess the impact of Gender and Inclusive Pedagogy (GIP) interventions on various aspects including teachers' attitudes, intention, concern, efficacy, practices, gender sensitivity, students' psychological sense of belongingness, and student participation and achievement.

1.2.3. Study methods

The data collection process was divided into three phases: Baseline, Midline, and Endline. During each phase, both qualitative and quantitative methods were employed to ensure a comprehensive evaluation. Each phase was designed to measure the impact of the GIP intervention on specific areas, including teachers' attitudes, intentions, concerns, self-efficacy, classroom practices, gender sensitivity, and students' psychological sense of belonging, as well as their participation and learning achievements.

For the quantitative phase, the study utilized a quasi-experimental research design to examine the effectiveness of GIP interventions on the variables. Survey questionnaires were administered to both teachers and students, with the content contextualized based on educational terminology commonly used in Vietnam education system.

Data analysis encompassed rigorous statistical procedures, including descriptive statistics (such as means and standard deviations) to summarize numerical data, and inferential statistics (such as t-tests) to compare pre- and post-intervention measurements. Qualitative data gathered from interviews, observations, and other qualitative methods underwent thematic analysis. This qualitative approach involved coding and identifying recurring themes and patterns within the qualitative dataset, thereby providing a nuanced understanding of the impact of interventions on promoting inclusive education practices.

By combining these diverse research tools and analytical strategies, the study aimed to offer a comprehensive assessment of the impact of GIP interventions on fostering inclusive practices within educational settings. This integrated approach allowed for a more holistic understanding of the complex dynamics at play and provided valuable insights for informing

future educational interventions and policies.

Research tools and participants: The study utilized a diverse set of validated tools and methods to comprehensively evaluate the impact of interventions on inclusive education practices. These included teacher questionnaires, the Classroom Observation Scale, school observation tools for principals, and the Psychological Sense of School Membership Scale. Additionally, interviews and focus groups were conducted with teachers and students to gather qualitative insights into their experiences and perceptions of the interventions.

To enhance the assessment, the study also used competency-based pre- and post-achievement tests, document reviews, and observations during training sessions. These various methods targeted different stakeholders and contexts, providing a rich dataset for analysis.

These tools were used in both the experimental and control groups to collect quantitative and qualitative data on various aspects of the intervention's impact. By focusing on teachers' attitudes, efficacy, and classroom practices, as well as students' participation and academic achievement, the study provided a comprehensive evaluation of the intervention's effectiveness over time.

The study employed a variety of validated research tools to comprehensively evaluate the impact of interventions on inclusive education practices. These tools included:

- **Teacher Questionnaires:** Administered to assess teachers' attitudes, intentions, concerns, self-efficacy, and classroom practices.
- **Classroom Observation Scale:** Used during in-person assessments to evaluate classroom practices.
- **School Observation Tools:** Utilized by principals to assess the school environment.
- **Psychological Sense of School Membership Scale:** Applied to measure students' sense of belonging.
- **Interviews and Focus Groups:** Conducted with teachers and students to gather qualitative insights into their experiences and perceptions of the interventions.
- **Competency-Based Pre- and Post-Achievement Tests:** Used to evaluate student learning outcomes.
- **Document Reviews and Training Session Observations:** Employed to collect additional data on the implementation process and context.

The data collection involved the following participant groups:

- **Teachers (teaching grade 7 and 9):** Participants who completed questionnaires, took part in focus groups, and were observed during classroom assessments.

- Students (Grade 7 and 9): Participants who completed the Psychological Sense of School Membership Scale, participated in focus groups, and took competency-based pre- and post-tests.

- Principals: Participants who used the school observation tools to evaluate the overall school environment.

The study was systematically conducted across three phases: Baseline, Midline, and Endline, with each phase designed to capture the specific impacts of the GIP intervention on the dimensions. This project applied the Teacher Professional Development (TPD) package, designed for secondary school teachers and principals, based on the GIP approach. The main aim was to bring about positive changes in the attitudes, efficacy, and pedagogical practices of educators, ultimately to improve the participation and learning achievements of students in grades VII and IX in experimental schools. The content covered in TPD consisted of four progressive tiers, each addressing different aspects of GIP (see the table below). This phased approach allowed for a thorough assessment of changes over time, providing valuable insights into the effectiveness of the interventions.

The GIP project aimed to support secondary-level teachers in 10 experimental schools and 10 control schools, all at the middle secondary level. These schools were selected to represent a mix of urban, semi-urban, and rural areas within government schools across two provinces: Quang Ninh and Vinh Phuc. Specifically, the districts included were Tam Dao (a rural area in Vinh Phuc) and Halong (an urban area in Quang Ninh). Below are the tables of participating schools.

Table 1. Participating schools

Province	School Type	School name and code	Location
Vinh Phuc	Experimental schools	Hợp Châu Lower secondary school (VP.TN1. TT)	Rural
		Tam Đảo Lower secondary school (VP.TN2. NT)	Rural
		Hồ Sơn Lower secondary school (VP.TN3. NT)	Rural
		Minh Quang Lower secondary school (VP.TN4. NT)	Rural
		Bồ Lý Lower secondary school (VP.TN5. NT)	Rural
	Control schools	Yên Dương Lower secondary school (VP.DC1. NT)	Rural
		Đạo Trù Lower secondary school (VP.DC2. NT)	Rural
		Nguyễn Trãi Lower secondary school (VP.DC3. NT)	Rural
		Dân Tộc nội trú Lower secondary school (VP.DC4. NT)	Rural
		Đại Đình Lower secondary school (VP.DC5. NT)	Rural

Ha Long	Experimental schools	Kim Đồng Lower secondary school (QN.TN1. TT)	Urban
		Trời Lower secondary school (QN.TN2. TT)	Urban
		Minh Khai Lower secondary school (QN.TN3. TT)	Urban
		Đại Yên Lower secondary school (QN.TN4. NT)	Urban
		Đồng Lâm 2 Lower secondary school (QN.TN5. NT)	Rural
	Control schools	Hồng Hải Lower secondary school (QN.DC1. TT)	Urban
		Cao Thắng Lower secondary school (QN.DC2. TT)	Urban
		Hà Trung Lower secondary school (QN.DC3. TT)	Urban
		Thông Nhất Lower secondary school (QN.DC4. NT)	Rural
		Sơn Dương Lower secondary school (QN.DC5. NT)	Rural

Table 2. *Research tools and number of participants who are participating in the research*

Tools	School Observation	Classroom observation	Survey questionnaire (teachers)	PSSM Questionnaire (Students)	Semi-structured Interview	FGD	Pre-post academic test
Baseline (Experimental)	10	40	237	2791	0	0	2791
Baseline (Control)	10	40	231	2798	0	0	2798
Midline (Experimental)	0	0	0	0	30	50	0
Endline (Experimental)	10	40	64	2370	40	100	2370
Endline (Control)	10	40	90	2221	0	0	2221

II. Research results

2.1 School Observation Results

2.1.1. Infrastructure and facilities

2.1.1.1. Baseline and endline survey result data

Research results on infrastructure and facilities through school observation has been conducted in baseline and endline study. It can be seen the difference between the school change before and after intervention.

Below are the survey results from base line study

Table 3. *Accessibility and Facility Conditions in Schools (Baseline study)*

Statement	Response	Experimental Group Count	Experimental Group %	Control Group Count	Control Group %	Total Count	Total %
1. The school has safe boundary/green boundary	Strongly agree	4	20.0%	5	25.0%	9	45.0%
	Agree	4	20.0%	4	20.0%	8	40.0%
	Disagree	2	10.0%	1	5.0%	3	15.0%
2. Main entrance of the school is accessible	Strongly agree	7	35.0%	5	25.0%	12	60.0%
	Agree	3	15.0%	5	25.0%	8	40.0%
3. School ramp is in satisfactory condition to use	Strongly agree	2	10.0%	2	10.0%	4	20.0%
	Agree	2	10.0%	6	30.0%	8	40.0%
	Disagree	0	0.0%	1	5.0%	1	5.0%
	Service not available	6	30.0%	1	5.0%	7	35.0%
4. School playground is in satisfactory condition	Strongly agree	5	25.0%	4	20.0%	9	45.0%
	Agree	4	20.0%	6	30.0%	10	50.0%
	Disagree	1	5.0%	0	0.0%	1	5.0%
5. School building has tactile que for students with visual impairment	Strongly agree	0	0.0%	1	5.0%	1	5.0%
	Agree	2	10.0%	3	15.0%	5	25.0%
	Disagree	1	5.0%	3	15.0%	4	20.0%
	Strongly disagree	1	5.0%	0	0.0%	1	5.0%
	Service not available	6	30.0%	3	15.0%	9	45.0%

Statement	Response	Experimental Group Count	Experimental Group %	Control Group Count	Control Group %	Total Count	Total %
6. School has railing for safe mobility of the students	Strongly agree	4	20.0%	3	15.0%	7	35.0%
	Agree	5	25.0%	7	35.0%	12	60.0%
	Service not available	1	5.0%	0	0.0%	1	5.0%
7. School has separate toilet for boys, girls and others	Strongly agree	5	25.0%	3	15.0%	8	40.0%
	Agree	4	20.0%	7	35.0%	11	55.0%
	Disagree	1	5.0%	0	0.0%	1	5.0%
8. Classrooms are wheelchair accessible	Strongly agree	3	15.0%	2	10.0%	5	25.0%
	Agree	2	10.0%	4	20.0%	6	30.0%
	Strongly disagree	1	5.0%	0	0.0%	1	5.0%
	Service not available	4	20.0%	4	20.0%	8	40.0%
9. School has wheelchair accessible toilet	Strongly agree	4	20.0%	4	20.0%	8	40.0%
	Agree	6	30.0%	5	25.0%	11	55.0%
	Disagree	0	0.0%	1	5.0%	1	5.0%
10. Toilets are in good condition (clean, dry etc.)	Strongly agree	5	25.0%	4	20.0%	9	45.0%
	Agree	5	25.0%	6	30.0%	11	55.0%
11. School has appropriate waste bins in toilets to throw trash/pads	Strongly agree	0	0.0%	1	5.0%	1	5.0%
	Agree	2	10.0%	3	15.0%	5	25.0%
	Disagree	3	15.0%	4	20.0%	7	35.0%
	Strongly disagree	1	5.0%	0	0.0%	1	5.0%
	Service not available	4	20.0%	2	10.0%	6	30.0%
12. There is separate bin in the girls' toilet to throw away used pad	Strongly agree	5	25.0%	5	25.0%	10	50.0%
	Agree	5	25.0%	5	25.0%	10	50.0%
13. The school has proper wash facilities (handwash stations,	Strongly agree	0	0.0%	1	5.0%	1	5.0%
	Agree	2	10.0%	1	5.0%	3	15.0%
	Disagree	2	10.0%	4	20.0%	3	15.0%

Statement	Response	Experimental Group Count	Experimental Group %	Control Group Count	Control Group %	Total Count	Total %
soap, handwash etc) to maintain hygiene	Strongly disagree	1	5.0%	0	0.0%	2	10.0%
	Service not available	5	25.0%	4	20.0%	11	55.0%
14. School has proper water and drinking facilities	Strongly agree	4	20.0%	5	25.0%	9	45.0%
	Agree	6	30.0%	5	25.0%	11	55.0%

This above table showed the accessibility and overall condition of facilities in schools, comparing responses from an experimental group and a control group through the baseline study. The data highlights various aspects of school infrastructure, focusing on accessibility, safety, and hygiene. Boundary Safety: 85% schools have school boundaries safe, with 45% strongly agreeing. The experimental and control groups showed similar responses. Entrance Accessibility: The majority, 60%, strongly agreed that the main entrance is accessible, with no significant discrepancy between the groups. School Ramp Condition: 35% schools are reported that the service was not available. However, among those who had ramps, 40% agreed they were satisfactory, and 20% strongly agreed. Playground Condition: A total of 95% indicated the playground was satisfactory, with 45% strongly agreeing. Only 5% disagreed. Tactile Cues for Visually Impaired Students: This area showed significant gaps, with 45% indicating that the service was not available. Agreement on adequacy was low, with only 25% acknowledging its presence. Railing for Mobility: Most respondents (60%) agreed or strongly agreed that railings were available for safe mobility, with only 5% noting the service as unavailable. Separate Toilets: 95% of respondents agreed or strongly agreed on the availability of separate toilets for boys, girls, and others, reflecting good compliance. Wheelchair Accessibility: Classrooms: 25% strongly agreed they were accessible, while 40% reported the service was not available. Toilets: 95% agreed or strongly agreed that wheelchair-accessible toilets were available. Toilet Condition: Cleanliness and maintenance were rated highly, with 100% of respondents agreeing or strongly agreeing that toilets were in good condition. Waste Disposal in Toilets: Only 30% agreed that appropriate waste bins were available, with 35% disagreeing and 30% indicating the service was not available. Separate Bin for Used Pads: There was unanimous agreement (100%) on the availability of separate bins in the girls' toilets. Handwash Facilities: A significant portion (45%) indicated that handwash facilities were not available, and only 15% agreed they were adequate. Drinking Water Facilities: Overall, 100% of respondents agreed or strongly agreed that proper water and drinking facilities were available. The baseline survey results indicate that there is generally no significant difference between the experimental schools and the control schools in terms of infrastructure and facilities. However, the baseline study highlights critical areas needing improvement, such as tactile cues for visually impaired students, handwash facilities, and waste disposal infrastructure in toilets. While most schools seem to have satisfactory playgrounds, separate toilets, and drinking facilities, significant gaps remain in ensuring comprehensive accessibility and hygiene facilities.

Table 4. Accessibility and Facility Conditions in Schools (Endline study)

Indicator	Response	Experimental Group Count	Experimental Group %	Control Group Count	Control Group %	Total Count	Total %
1. The school has safe boundary/green boundary	Strongly agree	7	35.0%	5	25.0%	12	60.0%
	Agree	3	15.0%	5	25.0%	8	40.0%
2. Main entrance of the school is accessible.	Strongly agree	8	40.0%	8	40.0%	16	80.0%
	Agree	2	10.0%	2	10.0%	4	20.0%
3. School ramp is in satisfactory condition.	Strongly agree	6	30.0%	0	0.0%	6	30.0%
	Agree	4	20.0%	6	30.0%	10	50.0%
	Disagree	0	0.0%	2	10.0%	2	10.0%
	Service not available	0	0.0%	2	10.0%	2	10.0%
4. School playground is in satisfactory condition.	Strongly agree	7	35.0%	4	20.0%	11	55.0%
	Agree	3	15.0%	4	20.0%	7	35.0%
	Disagree	0	0.0%	1	5.0%	1	5.0%
	Service not available	0	0.0%	1	5.0%	1	5.0%
5. School building has tactile que for students with visual impairment.	Strongly agree	8	40.0%	3	15.0%	11	55.0%
	Agree	2	10.0%	1	5.0%	3	15.0%
	Disagree	0	0.0%	2	10.0%	2	10.0%
	Service not available	0	0.0%	4	20.0%	4	20.0%
6. School has railing for mobility.	Strongly agree	8	40.0%	4	20.0%	12	60.0%
	Agree	2	10.0%	5	25.0%	7	35.0%
	Service not available	0	0.0%	1	5.0%	1	5.0%
7. School has separate toilet for boys and girls.	Strongly agree	8	40.0%	6	30.0%	14	70.0%
	Agree	2	10.0%	4	20.0%	6	30.0%
8. Classrooms are wheelchair accessible.	Strongly agree	7	35.0%	2	10.0%	9	45.0%
	Agree	3	15.0%	1	5.0%	4	20.0%
	Disagree	0	0.0%	4	20.0%	4	20.0%
	Service not available	0	0.0%	3	15.0%	3	15.0%

Indicator	Response	Experimental Group Count	Experimental Group %	Control Group Count	Control Group %	Total Count	Total %
9. School has wheelchair accessible toilet.	Strongly agree	10	50.0%	2	10.0%	12	60.0%
	Agree	0	0.0%	4	20.0%	4	20.0%
	Service not available	0	0.0%	4	20.0%	4	20.0%
10. Toilets are in good condition	Strongly agree	8	40.0%	4	20.0%	12	60.0%
	Agree	2	10.0%	6	30.0%	8	40.0%
11. School has appropriate waste bins in toilets.	Strongly agree	7	35.0%	3	15.0%	10	50.0%
	Agree	3	15.0%	7	35.0%	10	50.0%
12. There is separate bin in the girls' toilet to throw away used pad.	Strongly agree	7	35.0%	4	20.0%	11	55.0%
	Agree	3	15.0%	6	30.0%	9	45.0%
13. The school has proper wash facilities to maintain hygiene	Strongly agree	6	30.0%	5	25.0%	11	55.0%
	Agree	4	20.0%	5	25.0%	9	45.0%
14. School has pure drinking water facilities	Strongly agree	8	40.0%	6	30.0%	14	70.0%
	Agree	2	10.0%	4	20.0%	7	30.0%
	Service not available	0	0.0%	2	10.0%	2	10.0%
15. The school has proper waste management system	Strongly agree	6	30.0%	3	15.0%	9	45.0%
	Agree	4	20.0%	5	25.0%	9	45.0%
	Disagree	0	0.0%	2	10.0%	2	10.0%
16. The school maintains the cleanliness regularly	Strongly agree	8	30.0%	4	20.0%	12	50.0%
	Agree	2	20.0%	5	20.0%	7	40.0%
	Disagree	0	0.0%	1	10.0%	1	10.0%

The endline survey data also reflects various aspects of school infrastructure, including accessibility, safety, and facilities for students with special needs. 1) Safe Boundary and Main Entrance Accessibility: The data indicates that a higher percentage of respondents from experimental schools (35%) strongly agree that their schools have a safe boundary compared to control schools (25%). Similarly, for the accessibility of the main entrance, both experimental and control schools have equal percentages (40%) of respondents strongly agreeing. This suggests that while both types of schools ensure accessibility, experimental schools are perceived to have slightly safer boundaries. 2) School Ramp and Playground Conditions: Significant differences emerge in the condition of school ramps, with 30% of respondents from experimental schools strongly agreeing that the ramps are satisfactory,

whereas none from the control schools do. Additionally, control schools have a notable 20% reporting either disagreement or unavailability of ramps. This contrast is also observed in playground conditions, where 35% of respondents from experimental schools strongly agree on the satisfactory condition compared to 20% from control schools. The lack of negative responses from the experimental group further underscores their superior infrastructure. 3) Facilities for Students with Special Needs: Facilities such as tactile cues for visually impaired students and railings for mobility show a marked difference. In experimental schools, 40% strongly agree on the presence of tactile cues, compared to 15% in control schools. Similarly, 40% of respondents from experimental schools strongly agree that railings are available for mobility, against 20% from control schools. These results highlight the advanced provisions in experimental schools for students with special needs. 4) Sanitary Facilities and Hygiene: Sanitary facilities, including separate toilets for boys and girls, and the condition of these toilets, reveal that experimental schools have an edge. Forty percent of respondents from experimental schools strongly agree that there are separate toilets, compared to 30% from control schools. For the condition of these toilets, 40% from experimental schools strongly agree they are in good condition, as opposed to 20% from control schools. Additionally, facilities such as proper wash areas and waste bins in toilets are better rated in experimental schools, emphasizing better hygiene standards. 5) Gender-Sensitive Facilities: Gender-sensitive facilities, such as bins for sanitary pads and changing rooms in girls' toilets, are more prevalent in experimental schools. Thirty-five percent of respondents from experimental schools strongly agree on the availability of bins compared to 20% from control schools. The provision of changing rooms shows a similar trend, with 40% from experimental schools strongly agreeing, highlighting their commitment to gender-sensitive infrastructure.

The data indicates that experimental schools generally have superior infrastructure and facilities compared to control schools at the end of participating the project. This includes better accessibility, safety measures, special needs facilities, sanitary provisions, and gender-sensitive amenities. These findings suggest that the initiatives taken in experimental schools are effectively enhancing the learning environment, thus supporting the project's goals of improving student participation and learning achievement through gender and inclusive pedagogies during and beyond the pandemic.

2.1.1.2. Comparing Baseline and Endline Survey Results Between Control and Experimental Schools

Table 5. Control and experimental schools compared in terms of Infrastructure and facilities in baseline study

	Group	N	Mean	S.D	Sig.
The school has safe boundary/green boundary	Experimental group	10	1,80	,789	,556
	Control group	10	1,60	,699	
Main entrance of the school is accessible.	Experimental group	10	1,30	,483	,388

	Control group	10	1,50	,527	
School ramp is in satisfactory condition.	Experimental group	10	3,60	1,838	,058
	Control group	10	2,20	1,135	
School playground is in satisfactory condition.	Experimental group	10	1,60	,699	1,000
	Control group	10	1,60	,516	
School building has tactile que for students with visual impairment.	Experimental group	10	4,10	1,287	,120
	Control group	10	3,10	1,449	
School has railing for mobility.	Experimental group	10	1,90	1,197	,630
	Control group	10	1,70	,483	
School has separate toilet for boys and girls.	Experimental group	10	1,60	,699	,714
	Control group	10	1,70	,483	
Classrooms are wheelchair accessible.	Experimental group	10	3,10	1,853	,903
	Control group	10	3,00	1,764	
School has wheelchair accessible toilet.	Experimental group	10	1,60	,516	,714
	Control group	10	1,70	,675	
Toilets are in good condition	Experimental group	10	1,50	,527	,673
	Control group	10	1,60	,516	
School has appropriate waste bins in toilets.	Experimental group	10	3,70	1,252	,176
	Control group	10	2,90	1,287	
There is separate bin in the girls' toilet to throw away used pad.	Experimental group	10	1,50	,527	1,000

	Control group	10	1,50	,527	
The school has proper wash facilities to maintain hygiene	Experimental group	10	3,90	1,287	,520
	Control group	10	3,50	1,434	
School has pure drinking water facilities	Experimental group	10	1,40	,516	,398
	Control group	10	1,60	,516	
The school has proper waste management system	Experimental group	10	1,60	,516	,476
	Control group	10	1,90	1,197	
The school maintains the cleanliness regularly	Experimental group	10	1,80	,919	,556
	Control group	10	1,60	,516	

All observable items in terms of Infrastructure and facilities displayed no significant differences between the two groups in the baseline. In terms of the availability of safe boundary/green boundary ($p > 0.05$), experimental group had a higher mean score of 1.70, compared to 1.60 in the control group, however, the difference was considered insignificant. In addition, in terms of the condition of school ramp, the observation results also showed an unimportant difference ($p\text{-value} > 0.05$), with a higher mean score in the experimental group (3.60 compared to 2.20). A similar trend was seen in the availability of tactile que for students with visual impairment in school, with mean scores were 4.10 and 3.10 in experimental and control groups, respectively, however, the differences were again not statistically significant. Despite the lower average scores (which meant higher level of agreement) in the observations of the experimental group in terms the good condition of toilets, there were no significant differences between the two groups. Similarly, no significant differences were seen in the observations of the two groups in terms of a proper waste management system despite lower mean scores in experimental group.

The observations of pure drinking water facilities and regular cleanliness maintenance between the two groups also differed insignificantly in the baseline. The railing for mobility was also observed with no significant differences, along with the accessibility of wheelchair to classrooms, despite higher mean scores in the control group.

Sschool observation: Baseline and end-line compared

Table 6. Baseline and end-line compared in terms of Infrastructure and facilities

	Baseline		Endline	
	N	Mean	N	Mean
The school has safe boundary/green boundary	2	1,70	2	1,40 19

	0		0	
Main entrance of the school is accessible.	2 0	1,40	2 0	1,20
School ramp is in satisfactory condition.	2 0	2,90	2 0	2,10
School playground is in satisfactory condition.	2 0	1,60	2 0	1,65
School building has tactile que for students with visual impairment.	2 0	3,60	2 0	2,15
School has railing for mobility.	2 0	1,80	2 0	1,55
School has separate toilet for boys and girls.	2 0	1,65	2 0	1,30
Classrooms are wheelchair accessible.	2 0	3,05	2 0	2,20
School has wheelchair accessible toilet.	2 0	1,65	2 0	2,00
Toilets are in good condition	2 0	1,55	2 0	1,40
School has appropriate waste bins in toilets.	2 0	3,30	2 0	1,50
There is separate bin in the girls' toilet to throw away used pad.	2 0	1,50	2 0	1,45
The school has proper wash facilities to maintain hygiene	2 0	3,70	2 0	1,45
School has pure drinking water facilities	2 0	1,50	2 0	1,30
The school has proper waste management system	2 0	1,75	2 0	1,65
The school maintains the cleanliness regularly	2 0	1,70	2 0	1,45

On a scale of 5, observers were required to rate the availability of Infrastructure and facilities from 1 – Strongly agree to 5 – Service Not available. In terms of safe/green boundaries, there was an increase in the level of agreement of observers from 1.70 in the baseline to 1.40 in the endline. Similar increases in the level of consensus were observed between the baseline and endline regarding the entrance to the school, including the access to the main entrance of the school (1.40 in baseline and 1.20 in endline) and the satisfactory condition of school ramp (2.90 in baseline and 2.10 in endline). However, the observations of the satisfactory condition of the school playground showed a slight decrease in the level of agreement between the baseline and endline (from 1.60 to 1.65).

Regarding the support for students with disabilities, the availability of tactile que for students with visual impairment showed a significant decrease in the average score from 3.60 to 2.15, indicating a higher degree of consensus regarding this aspect. Moreover, railing for mobility and wheelchair access to classrooms also underwent significant changes in the overall assessment from the baseline to the endline from 1.80 to 1.55 and from 3.05 to 2.20, respectively.

In terms of the toilets at school, observers reported a higher level of agreement in terms of the availability of separate toilets for boys and girls (1.50 and 1.45 and good condition of the toilet (1.55 and 1.40). In addition, appropriate bins in toilets have undergone significant increases

in the level of agreement of observers, from 3.30 (strongly disagree to disagree) in the baseline to 1.50 (agree to strongly agree) in the endline. The availability of separate bins in the girls' toilet to throw away used pads showed slight changes from 1.50 to 1.45. Interestingly, there had been a remarkable decrease in the average scores from observers regarding the proper wash facilities to maintain hygiene from 3.70 (strongly disagree to disagree) to 1.45 (agree to strongly agree). In terms of a proper waste management system, there was also an increase in the level of agreement with a decrease in average scores from 1.75 to 1.65.

End-line: Control and Experimental Schools Compared

Table 7. Control and experimental schools compared in terms of Infrastructure and facilities in endline study

	Group	N	Mean	S.D	Sig.
The school has safe boundary/green boundary	Experimental group	10	1,30	,483	,388
	Control group	10	1,50	,527	
Main entrance of the school is accessible.	Experimental group	10	1,20	,422	1,000
	Control group	10	1,20	,422	
School ramp is in satisfactory condition.	Experimental group	10	1,40	,516	,006
	Control group	10	2,80	1,229	
School playground is in satisfactory condition.	Experimental group	10	1,30	,483	,115
	Control group	10	2,00	1,247	
School building has tactile que for students with visual impairment.	Experimental group	10	1,20	,422	,009
	Control group	10	3,10	1,792	
School has railing for mobility.	Experimental group	10	1,20	,422	,098
	Control group	10	1,90	1,197	
School has separate toilet for boys and girls.	Experimental group	10	1,20	,422	,355
	Control group	10	1,40	,516	
Classrooms are wheelchair accessible.	Experimental group	10	1,30	,483	,005

	Control group	10	3,10	1,524	
School has wheelchair accessible toilet.	Experimental group	10	1,00	0,000	,006
	Control group	10	3,00	1,764	
Toilets are in good condition	Experimental group	10	1,20	,422	,074
	Control group	10	1,60	,516	
School has appropriate waste bins in toilets.	Experimental group	10	1,30	,483	,081
	Control group	10	1,70	,483	
There is separate bin in the girls' toilet to throw away used pad.	Experimental group	10	1,30	,483	,196
	Control group	10	1,60	,516	
The school has proper wash facilities to maintain hygiene	Experimental group	10	1,40	,516	,673
	Control group	10	1,50	,527	
School has pure drinking water facilities	Experimental group	10	1,20	,422	,355
	Control group	10	1,40	,516	
The school has proper waste management system	Experimental group	10	1,40	,516	,096
	Control group	10	1,90	,738	
The school maintains the cleanliness regularly	Experimental group	10	1,20	,422	,062
	Control group	10	1,70	,675	

In the end-line comparison between control and experimental schools in terms of infrastructure and facilities, several significant differences and trends can be observed. Regarding the availability of tactile que for students with visual impairment in the school building, there was a statistically significant difference between the experimental and control groups ($p = 0.009 < 0.05$), with a significantly higher mean score of the control group (3.10 and 1.20), indicating a significantly higher level of agreement in the experimental group. There was a statistically significant difference ($p = 0.005 < 0.05$), the experimental group (mean = 1.30) reported a higher level of agreement on the access of wheelchair in

class compared to the control group (mean = 3.10). In addition, a significant difference was found between the experimental and control groups ($p = 0.006 < 0.05$) regarding the access of wheelchair to toilets in school. The experimental group (mean = 1.00) exhibited a higher level of agreement on this access compared to the control group (mean = 3.00). A similar trend was seen in the satisfactory condition of school ramp, with a lower mean score of the experimental group (p -value = $0.006 < 0.05$) and means were 1.40 and 2.80, indicating a higher level of consensus on the availability of this condition in the experimental group.

About the main entrance of the school, there were no significant differences observed, where the experimental group (mean = 1.20, respectively) had the same degree of agreement compared to the control group (mean 1.20). In terms of the condition of the school playground, there was no statistically significant difference ($p = 0.115$) between the experimental and control groups, indicating similar levels of agreement in terms of this aspect. Moreover, there was an insignificant difference ($p > 0.05$) regarding the availability of separate toilets for boys and girls, along with good condition of toilets, with the experimental group (mean = 1.30 and 1.20) compared to the control group (mean = 1.60 and 1.60). There was an insignificant difference observed ($p = 0.096$) with the experimental group (mean = 1.40) showing a higher degree of agreement of observers on proper waste management system compared to the control group (mean = 1.90) even though this difference was not significant.

2.1.2. ICT facility

The purpose of this part is to analyze and compare the availability and utilization of Information and Communication Technology (ICT) facilities between experimental and control schools in the baseline and endline study. This part will assess the effectiveness of interventions implemented in 10 experimental schools compared to 10 control schools concerning ICT facilities. The surveys focused on various aspects of ICT facilities, including computer availability, internet connectivity, smartphone usage, Wi-Fi access, multimedia projectors, and ICT lab facilities.

Regarding computer availability, experimental schools exhibited higher computer availability compared to control schools. In experimental schools, 65% (8 schools) strongly agreed that computers were available at school, while in control schools, only 25% (5 schools) strongly agreed. Similarly, in terms of computers available in classrooms, 55% (8 schools) of experimental schools strongly agreed compared to 15% (3 schools) in control schools.

In terms of internet connectivity, experimental schools showed better internet connectivity compared to control schools. In experimental schools, 65% (8 schools) strongly agreed that computers with internet connections were available at school, while only 25% (5 schools) strongly agreed in control schools. In classrooms, 55% (8 schools) of experimental schools strongly agreed that computers with internet connections were available, compared to 15% (3 schools) in control schools.

Regarding smartphone usage, experimental schools had higher smartphone usage for teaching and learning compared to control schools. In experimental schools, 40% (4 schools) strongly agreed that teachers use smartphones in teaching-learning, whereas in control schools, only 20% (4 schools) strongly agreed. Similarly, 50% (7 schools) of experimental schools strongly agreed that students use smartphones in teaching-learning, while only 15% (3 schools) strongly agreed in control schools.

In terms of Wi-Fi access, experimental schools had better Wi-Fi access compared to

control schools. In experimental schools, 50% (7 schools) strongly agreed that Wi-Fi/broadband connection for teachers was available at school, while only 15% (3 schools) strongly agreed in control schools. In classrooms, 55% (8 schools) of experimental schools strongly agreed that Wi-Fi/broadband connection for teachers was available, compared to 15% (3 schools) in control schools.

Regarding multimedia projectors and ICT labs, experimental schools showed higher availability compared to control schools. In experimental schools, 55% (7 schools) strongly agreed that multimedia projectors were available in classrooms, while in control schools, only 20% (4 schools) strongly agreed. Similarly, 55% (6 schools) of experimental schools strongly agreed that ICT labs were available at school, compared to 15% (3 schools) in control schools.

The endline study highlights significant differences in ICT facilities between experimental and control schools. Experimental schools demonstrated better availability and utilization of ICT resources, including computers, internet connectivity, smartphones, Wi-Fi access, multimedia projectors, and ICT labs. These findings suggest that interventions implemented in experimental schools have positively impacted ICT infrastructure and usage compared to control schools. Enhancing ICT facilities in schools can contribute to improved teaching-learning experiences and better educational outcomes.

Table 8. ICT facilities of Experimental schools and Control schools in endline survey

Criteria	Experimental Group	Control Group	Total
Computers available at school			
- Strongly agree	40.0% (8)	25.0% (5)	65.0%
- Agree	10.0% (2)	25.0% (5)	35.0%
Computers available in classroom			
- Strongly agree	40.0% (8)	15.0% (3)	55.0%
- Agree	10.0% (2)	30.0% (6)	40.0%
- Disagree	0.0%	5.0%	5.0%
Computers with internet connections at school			
- Strongly agree	40.0% (8)	25.0% (5)	65.0%
- Agree	10.0% (2)	25.0% (5)	35.0%
Computers with internet connections in classroom			
- Strongly agree	40.0% (8)	15.0% (3)	55.0%
- Agree	10.0% (2)	30.0% (6)	40.0%
- Disagree	0.0%	5.0% (1)	5.0%
Teachers use smartphone in teaching-learning			
- Strongly agree	20.0% (4)	20.0% (4)	40.0%
- Agree	30.0% (6)	25.0% (5)	55.0%
- Disagree	0.0%	5.0% (1)	5.0%
Students use smartphone in teaching-learning			
- Strongly agree	35.0% (7)	15.0% (3)	50.0%
- Agree	15.0% (3)	20.0% (4)	35.0%
- Disagree	0.0%	10.0% (2)	10.0%
- Service not available	0.0%	5.0% (1)	5.0%

Criteria	Experimental Group	Control Group	Total
Wifi/broadband connection for teachers at school			
- Strongly agree	35.0% (7)	15.0% (3)	50.0%
- Agree	15.0% (3)	35.0% (7)	50.0%
Wifi/broadband connection for teachers in classroom			
- Strongly agree	40.0% (5)	15.0% (3)	55.0%
- Agree	10.0% (2)	30.0% (6)	40.0%
- Disagree	0.0%	5.0% (1)	5.0%
Wifi/broadband connection for students at school			
- Strongly agree	15.0% (3)	20.0% (4)	35.0%
- Agree	35.0% (7)	15.0% (3)	50.0%
- Disagree	0.0%	10.0% (2)	10.0%
- Service not available	0.0%	5.0% (1)	5.0%
Wifi/broadband connection for students in classroom			
- Strongly agree	25.0% (5)	15.0% (3)	40.0%
- Agree	25.0% (5)	15.0% (3)	40.0%
- Disagree	0.0%	10.0% (2)	10.0%
- Service not available	0.0%	10.0% (2)	10.0%
Multimedia projector available in classroom			
- Strongly agree	35.0% (7)	20.0% (4)	55.0%
- Agree	15.0% (3)	25.0% (5)	40.0%
- Service not available	0.0%	5.0% (1)	5.0%
ICT Lab available at school			
- Strongly agree	30.0% (6)	15.0% (3)	45.0%
- Agree	20.0% (4)	35.0% (7)	55.0%
Students have facilities to practice in ICT Lab			
- Strongly agree	25.0% (5)	20.0% (4)	45.0%
- Agree	25.0% (5)	30.0% (6)	55.0%
Online classroom platform (e.g., google meet/zoom/teams)			
- Strongly agree	40.0% (3)	15.0% (3)	55.0%
- Agree	10.0% (8)	30.0% (6)	40.0%
- Disagree	0.0%	5.0% (1)	5.0%

Baseline: Control and Experimental Schools Compared

Table 9. Control and experimental schools compared in terms of ICT facility in baseline survey

		Group	N	Mean	S.D	Sig.
Computers are available at school	Availability	Experimental group	10	1,90	,316	1,000
		Control group	10	1,90	,316	
	Condition	Experimental group	9	1,00	.000 ^a	

		Control group	9	1,00	.000 ^a	
Wifi/broadband connection for teachers at school	Availability	Experimental group	10	2,00	.000 ^a	
		Control group	10	2,00	.000 ^a	
	Condition	Experimental group	10	1,00	.000 ^a	
		Control group	10	1,00	.000 ^a	
Wifi/broadband connection for students at school	Availability	Experimental group	10	1,90	,316	,290
		Control group	10	1,70	,483	
	Condition	Experimental group	9	1,00	0,000	,356
		Control group	7	1,14	,378	
ICT Lab are available at school	Availability	Experimental group	10	2,00	.000 ^a	
		Control group	10	2,00	.000 ^a	
	Condition	Experimental group	10	1,10	,316	1,000
		Control group	10	1,10	,316	
Students have facilities to practice in the ICT Lab	Availability	Experimental group	10	2,00	0,000	,168
		Control group	10	1,80	,422	
	Condition	Experimental group	10	1,10	,316	,387
		Control group	8	1,00	0,000	
Computers are available in classroom	Availability	Experimental group	10	1,80	,422	,628
		Control group	10	1,70	,483	
	Condition	Experimental group	8	1,00	.000 ^a	
		Control group	7	1,00	.000 ^a	
Wifi/broadband connection for teachers in classroom	Availability	Experimental group	10	1,90	,316	1,000
		Control group	10	1,90	,316	
	Condition	Experimental group	9	1,00	.000 ^a	
		Control group	9	1,00	.000 ^a	
Wifi/broadband connection for students in classroom	Availability	Experimental group	10	1,90	,316	,290
		Control group	10	1,70	,483	
	Condition	Experimental group	9	1,00	.000 ^a	
		Control group	7	1,00	.000 ^a	
Multimedia projector are available in classroom	Availability	Experimental group	10	1,80	,422	,168
		Control group	10	2,00	0,000	
	Condition	Experimental group	8	1,00	.000 ^a	
		Control group	10	1,00	.000 ^a	
Online classroom platform	Availability	Experimental group	10	1,80	,422	1,000

(e.g., meet/zoom/teams)	google	Control group	10	1,80	,422		
		Condition	Experimental group	8	1,00	.000 ^a	
		Control group	8	1,00	.000 ^a		
Teachers use smartphone in teaching-learning	Availability	Experimental group	10	1,50	,527	,673	
		Control group	10	1,60	,516		
	Condition	Experimental group	5	1,00	.000 ^a		
		Control group	6	1,00	.000 ^a		
Students use smartphone in teaching-learning	Availability	Experimental group	10	1,20	,422	,355	
		Control group	10	1,40	,516		
	Condition	Experimental group	2	1,00	.000 ^a		
		Control group	4	1,00	.000 ^a		

(a. t cannot be computed because the standard deviations of both groups are 0.)

It can be seen that in the baseline, there was no significant difference between the two groups in terms of various aspects regarding ICT facilities. Notably, regarding the observation of the use of smartphones by students, there was an imbalance between the two groups, with 2 schools in the experimental group being observed for this availability, while there were only 4 schools in the control group. The use of smartphones by teachers also showed a slight difference between the two groups, with 5 schools in the experimental group and 6 schools in the control group. Regarding Wi-Fi/broadband connection for students at school and in classrooms, there were also differences in the numbers of schools having access to this facility, with 9 schools in the experimental group and 7 schools in the control group.

End-line: Control and Experimental Schools Compared

Table 10. Control and experimental schools compared in terms of ICT facility in End-line study

	Group	N	Mean	S.D	Sig.
Computers are available at school	Experimental group	10	1,20	,422	,178
	Control group	10	1,50	,527	
Computers are available in classroom	Experimental group	10	1,20	,422	,022
	Control group	10	1,80	,632	
Computers with internet connections are available at school	Experimental group	10	1,20	,422	,178
	Control group	10	1,50	,527	
Computers with internet connections are available in	Experimental group	10	1,20	,422	,022

classroom	Control group	10	1,80	,632	
Teachers use smartphone in teaching-learning	Experimental group	10	1,60	,516	,714
	Control group	10	1,70	,675	
Students use smartphone in teaching-learning	Experimental group	10	1,30	,483	,045
	Control group	10	2,20	1,229	
Wifi/broadband connection for teachers at school	Experimental group	10	1,30	,483	,081
	Control group	10	1,70	,483	
Wifi/broadband connection for teachers in classroom	Experimental group	10	1,20	,422	,022
	Control group	10	1,80	,632	
Wifi/broadband connection for students at school	Experimental group	10	1,70	,483	,370
	Control group	10	2,10	1,287	
Wifi/broadband connection for students in classroom	Experimental group	10	1,50	,527	,073
	Control group	10	2,50	1,509	
Multimedia projector are available in classroom	Experimental group	10	1,30	,483	,159
	Control group	10	1,90	1,197	
ICT Lab are available at school	Experimental group	10	1,40	,516	,196
	Control group	10	1,70	,483	
Students have facilities to practice in the ICT Lab	Experimental group	10	1,50	,527	,673
	Control group	10	1,60	,516	
Online classroom platform (e.g., google meet/zoom/teams)	Experimental group	10	1,20	,422	,022

Control group	10	1,80	,632
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In the endline, there was a statistically significant difference between the two groups in terms of the availability of computers and computers with an internet connection in the classroom (p-value for both being $0.022 < 0.05$), with a lower mean score in the experimental group of 1.20 compared to a mean score of 1.80 in the control group (indicating a higher level of agreement about availability). However, the availability of those facilities on the scale of the whole school did not display significant differences between the two groups (p-value > 0.05), with mean scores in the experimental groups both being 1.20 and both being 1.50 in the control group.

Regarding the use of smartphones in teaching-learning activities, there was a significant difference between the observations of the two groups about the use by students (p-value = $0.045 < 0.05$), where the experimental group exhibited a higher level of agreement (mean score = 1.30) compared to the control group (mean score = 2.30). In comparison, the use of smartphones by teachers also showed relatively lower mean scores in the experimental group of 1.60 compared to 1.70 in the control group; however, the difference was considered insignificant.

The availability of Wi-Fi/broadband connection for teachers in the classroom also showed a statistically higher level of agreement in the experimental group (p-value = $0.022 < 0.05$), with mean scores being 1.20 and 1.80, respectively. In comparison, the ability of Wi-Fi/broadband connection for students and teachers at school, and this availability for students in the classroom, showed insignificant differences between the two groups in the endline.

In the endline, the use of online learning platforms also showed significant differences between the two groups in terms of mean scores on availability (p-value = $0.022 < 0.05$), with a lower mean score in the experimental group. Regarding the availability of multimedia projectors, ICT Lab, and facilities for students to practice in the ICT Lab, there were, however, no significant differences between the two groups.

Table 11. Number of ICT facilities in experimental and control schools

Variables	Groups	Baseline		End line	
		N (schools)	Total number	N (schools)	Total number
Number of laptop and computers in schools	Control	10	820	10	823
	Experimental	10	799	10	810
Number of ICT Labs in schools	Control	10	20	10	20
	Experimental	10	19	10	20

Regarding the number of laptops and computers, at baseline, control schools had a total of 820 laptops and computers, averaging 82 per school. This number saw a slight increase by the endline, with a total of 823 laptops and computers, maintaining an average of approximately 82.3 per school. This indicates minimal growth in the number of laptops and computers available in control schools over the study period. In contrast, experimental schools started with a slightly lower total number of laptops and computers at baseline, with 799 units,

averaging 79.9 per school. However, by the endline, the total number increased to 810, with an average of 81 per school. Although this increase is modest, it demonstrates a positive trend in the provision of laptops and computers in experimental schools, potentially due to the interventions implemented.

According to the number of ICT labs, both control and experimental schools had a similar starting point regarding the number of ICT labs at baseline. Control schools had 20 ICT labs, averaging 2 per school, and this number remained unchanged at the endline, indicating no improvement in the infrastructure over the study period. Experimental schools started with 19 ICT labs at baseline, slightly lower than the control schools. However, by the endline, experimental schools had increased their number of ICT labs to 20, achieving parity with the control schools. This increase, although modest, suggests that interventions in experimental schools had a positive impact on the provision of ICT lab facilities.

As can be seen in the above table, the analysis of the number of ICT facilities in experimental and control schools reveals some noteworthy trends. While both groups showed minor increases in the number of laptops and computers, the experimental schools demonstrated a slightly more significant improvement. The number of ICT labs in control schools remained static, whereas experimental schools showed a slight but positive increase. These findings suggest that the interventions implemented in experimental schools have had a positive impact, albeit modest, on the enhancement of ICT facilities. The increase in both the number of laptops and computers and the number of ICT labs in experimental schools indicates a trend towards better-equipped educational environments. This improvement in ICT infrastructure is likely to contribute to enhanced teaching and learning experiences, thereby supporting better educational outcomes.

2. 2. Results from teacher survey

2.2.1. Background Information

Table 12. Teachers' background information in baseline

		Frequency	Percent
Sex	Male	88	19,2
	Female	368	80,3
	Others	2	,4
	Total	458	100,0
Age	<30 yrs	58	12,7
	30-50 yrs	376	82,1
	>50 yrs	24	5,2
	Total	458	100,0
Highest level of educational qualification	Below Bachelor	35	7,6
	Bachelor	401	87,6
	Master's	22	4,8
	Total	458	100,0
Highest level of professional qualification	Teaching diploma	49	10,7

	BEd or equivalent	381	83,2
	MEd	25	5,5
	MPhil_Edn	1	,2
	EdD	2	,4
	Total	458	100,0
School Location	Rural	246	53,7
	Urban	212	46,3
	Total	458	100,0
School Type	Govt.	454	99,1
	Non-Govt	4	,9
	Total	458	100,0
School Type	Girls	1	,2
	Co-Edn	457	99,8
	Total	458	100,0
Knowing any person with a disability	Yes	422	92,1
	No	36	7,9
	Total	458	100,0
Family Member (husband wife/ sister/ brother/ childred etc)	Yes	169	36,9
	No	253	55,2
	N/A	36	7,9
	Total	458	100,0
Outside of the family (Acquaintaines, neighbours, store keeper, student, collegues etc)	Yes	332	72,5
	No	90	19,7
	N/A	36	7,9
	Total	458	100,0
Degree of success to date in teaching students with diverse learning needs in a regular classroom	Low	36	7,9
	Average	335	73,1
	High	59	12,9
	No opportunity	28	6,1
	Total	458	100,0
Level of training on Inclusive Education	none	184	40,2
	one unit/subject	55	12,0
	Two units/subjects	14	3,1
	>2 units/ subjects	18	3,9
	Content covered in other topics/courses	187	40,8
	Total	458	100,0

Level of knowledge of the local legislation or policy as it pertains to children with disabilities	None	6	1,3
	Poor	16	3,5
	Average	281	61,4
	Good	142	31,0
	Very good	13	2,8
	Total	458	100,0

The baseline data collected for the research provides a comprehensive overview of the demographic and professional characteristics of the teachers involved. The sample consists of 458 teachers, most of them are female (80.3%), with males representing 19.2% and a minimal representation of other genders (0.4%). The majority of these teachers fall within the 30-50 years age group (82.1%), with smaller proportions being under 30 years (12.7%) or over 50 years (5.2%).

In terms of educational qualifications, a significant majority hold a Bachelor's degree (87.6%), with fewer having attained a Master's degree (4.8%) or having qualifications below a Bachelor's level (7.6%). Professionally, most teachers possess a BEd or equivalent qualification (83.2%), while others have a teaching diploma (10.7%), an MEd (5.5%), an MPhil in Education (0.2%), or an EdD (0.4%).

Geographically, the teachers are relatively evenly split between rural (53.7%) and urban (46.3%) school locations. An overwhelming majority teach in government schools (99.1%) and only 4 teachers are teaching in non-governmental schools.

Regarding personal connections to individuals with disabilities, 92.1% of the teachers know someone with a disability, and 36.9% have a family member with a disability. Outside their immediate families, 72.5% have acquaintances or colleagues with disabilities.

In terms of their experience and success in teaching students with diverse learning needs, 73.1% rate their success as average, 12.9% as high, 7.9% as low, and 6.1% have not had the opportunity to teach such students. Training on inclusive education varies, with 40.2% having no training, 12.0% having completed one unit or subject, and smaller percentages having completed two or more units. Notably, 40.8% have covered relevant content in other courses. Knowledge of local legislation or policy related to children with disabilities is predominantly average (61.4%), with 31.0% rating their knowledge as good, 2.8% as very good, 3.5% as poor, and 1.3% having no knowledge at all.

Table 13. Teachers' background information in endline

		Frequency	Percent
Sex	Male	102	20,9
	Female	385	78,7
	Others	2	,4
	Total	489	100,0
Age	<30 yrs	37	7,6
	30-50 yrs	420	85,9
	>50 yrs	32	6,5
	Total	489	100,0
Highest level of educational qualification	Bachelor	447	91,4

	Master's	42	8,6
	Total	489	100,0
Highest level of professional qualification	M.Ed	462	94,5
	M.Phill of Education	25	5,1
	Doctor of Education	2	,4
	Total	489	100,0
School Location	Rural	275	56,2
	Urban	214	43,8
	Total	489	100,0
School Type	Govt.	487	99,6
	Non-Govt	2	,4
	Total	489	100,0
School Type	Boys	1	,2
	Co-Edn	488	99,8
	Total	489	100,0
Knowing any person with a disability	Yes	464	94,9
	No	25	5,1
	Total	489	100,0
Family Member (husband wife/ sister/ brother/ childred etc)	Yes	213	43,6
	No	251	51,3
	N/A	25	5,1
	Total	489	100,0
Outside of the family (Acquaintaines, neighbours, store keeper, student, colleagues etc)	Yes	370	75,7
	No	94	19,2
	N/A	25	5,1
	Total	489	100,0
Degree of success to date in teaching students with diverse learning needs in a regular classroom	Low	25	5,1
	Average	374	76,5
	High	59	12,1
	No opportunity to teach these students yet	31	6,3
	Total	489	100,0
Level of training on Inclusive Education	none	154	31,5

	one unit/subject	71	14,5
	Two units/subjects	46	9,4
	>2 units/ subjects	52	10,6
	Content covered in other topics/courses	166	33,9
	Total	489	100,0
Level of knowledge of the local legislation or policy as it pertains to children with disabilities	None	8	1,6
	Poor	17	3,5
	Average	287	58,7
	Good	168	34,4
	Very good	9	1,8
	Total	489	100,0

The endline data collected provides updated insights into the demographic and professional characteristics of the teachers involved in the study. The sample size for this phase is 489 teachers, with a majority being female (78.7%), followed by males (20.9%), and a small proportion identifying as other genders (0.4%). Age distribution shows that most teachers are within the 30-50 years range (85.9%), with smaller percentages under 30 years (7.6%) and over 50 years (6.5%).

In terms of educational attainment, the majority hold a Bachelor's degree (91.4%), while the remainder have a Master's degree (8.6%). Professionally, most teachers have attained an M.Ed (94.5%), with smaller numbers holding an M.Phil in Education (5.1%) or a Doctorate in Education (0.4%).

Geographically, teachers are distributed between rural (56.2%) and urban (43.8%) school locations. An overwhelming majority of the teachers work in government schools (99.6%) and co-educational institutions (99.8%) with only 1 teacher working in a boys school.

Regarding personal connections to individuals with disabilities, 94.9% of the teachers know someone with a disability, and 43.6% have a family member with a disability. Additionally, 75.7% know individuals with disabilities outside their immediate family.

About their success in teaching students with diverse learning needs, 76.5% rate their success as average, 12.1% as high, 5.1% as low, and 6.3% have not yet had the opportunity to teach such students. The level of training on inclusive education varies, with 31.5% having no training, 14.5% having completed one unit or subject, 9.4% having completed two units, and 10.6% having completed more than two units. Furthermore, 33.9% have covered relevant content in other courses. Knowledge of local legislation or policy related to children with disabilities is predominantly average (58.7%), with 34.4% rating their knowledge as good, 1.8% as very good, 3.5% as poor, and 1.6% having no knowledge at all.

2.2.2. Teacher's General Evaluation of Gender and Inclusive Teaching Practices

Table 14. Teacher degree of success to date in teaching students with diverse learning needs in a regular classroom

Variables	Baseline		Endline	
	N	Mean	N	Mean
Teachers' degree of success to date in teaching students with diverse learning needs in a regular classroom	458	2.17	489	2.20

Table 15. Endline teacher degree of success to date in teaching students with diverse learning needs in a regular classroom in control and experimental groups

Variables	Groups	Endline		Sig. (Difference) in endline comparing to control group		
		N	Mean			
Teachers' degree of success to date in teaching students with diverse learning needs in a regular classroom	Experimental teachers	Trained teachers	66	2.38	.022	
		All	239	2.23	.241	
	Control			250	2.16	

In the question of teachers' degree of success in teaching students with various learning needs in a normal classroom, in a range of 3 starting from no opportunity yet to a high level of success, there is a small improvement in teachers' assessment of their level of success from a mean of 2,17 to 2.2. There is a statistically significant increase in this overall assessment in the end line between trained teachers in the experimental group and the teachers in the control group (p-value = 0.022). When comparing all teachers from the two groups, despite the increase in the average level of success, there is no statistical significance in the difference between those two means. This indicates that the trained teachers in the experimental group have a higher assessment of their success in teaching students with different learning needs in a regular context. In interview section, teachers in experimental schools confirmed their skills increasing after the training, they said that they now can master some skills to teach students with diverse learning needs in their class. In the interview section, teachers in experimental schools confirmed an increase in their skills after the training. They mentioned that they now have the ability to teach students with diverse learning needs in their classes. A Mathematics teacher in Quang Ninh stated, "The training introduced methods such as collaborative learning, differentiated instruction, and using gender-neutral language. I apply these methods in my classroom by grouping students for projects based on diverse criteria and tailoring instructions to meet different learning needs. One challenge I face is the time constraint to plan and implement differentiated lessons. I have addressed some challenges by creating a repository of differentiated resources and collaborating with colleagues to share best practices. However, balancing the diverse needs of all students remains a challenge due to large class sizes."

Table 16. Teacher level of training on Inclusive Education

Variables	Baseline		Endline	
	N	Mean	N	Mean

Teachers' level of training on Inclusive Education	458	2.93	489	3.01
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Table 17. *Teacher level of training on Inclusive Education* in control and experimental groups

Variables	Groups	Endline		Sig. (Difference) in endline comparing to control group	
		N	Mean		
Teachers' level of training on Inclusive Education	Trained teachers	66	4.38	.000	
	Experimental	All teachers	239	3.43	.000
	Control		250	2.61	

In a range of 5, teachers are asked to assess their level of training on Inclusive Education in baseline and end line. There is an important increase in the mean of the overall level of training between the baseline and end line, while there are statistically significant differences between the two groups (p-value = 0.000). There has been a noticeable difference in the level of training between trained teachers in the experimental group and the control group, with the means being 4.38 and 2.61, respectively. These improvements demonstrate a higher level of training in Inclusive Education between baseline and end line while maintaining a crucial difference between the two groups. One teacher commented, "The training has significantly enhanced our understanding and ability to implement inclusive education practices effectively, making a noticeable difference in our classrooms."

Table 18. *Teacher level of knowledge of the local legislation or policy as it pertains to children with disabilities*

Variables	Baseline		Endline	
	N	Mean	N	Mean
Teachers' level of knowledge of the local legislation or policy as it pertains to children with disabilities	458	3.31	489	3.31

Table 19. *Teacher level of knowledge of the local legislation or policy as it pertains to children with disabilities* in control and experimental groups

Variables	Groups	Endline		Sig. (Difference) in endline comparing to control group	
		N	Mean		
Teachers' level of knowledge of the local legislation or policy as it pertains to children with disabilities	Trained teachers	66	3.45	.062	
	Experimental	All teachers	239	3.35	.252
	Control		250	3.28	

From None to Very Good, teachers in two school groups are asked to assess their level of understanding about local legislation or policy focusing on children with disabilities. With the result

from the survey, there is no change in the average assessment of teachers in their degree of knowledge (3.31 before and after). When comparing teachers in those two groups, there has not been any statistically significant difference between the experimental group and control group (p-value >0.05) despite some improvements in average scores in the end line, indicating that the training sessions were not concentrating on legislation and laws focusing on disabled children and ineffective on providing teachers with understanding of this aspect.

2.2.3. Teacher Attitudes to Inclusion Scale (TAIS)

Table 20. Teacher perspectives on the possibility of executing Inclusive Educational activities

Variables	Baseline		Endline	
	N	Mean	N	Mean
Teachers' belief that all students regardless of their ability should be taught in regular classrooms	458	4.50	489	4.70
Teachers' belief that that inclusion is beneficial to all students socially	458	4.79	489	5.04
Teachers' belief that inclusion benefits all students academically	458	4.61	489	4.81
Teachers' belief that all students can learn in inclusive classrooms if their teachers are willing to adapt the curriculum	458	4.59	489	4.85
Teachers' pleasure to have the opportunity to teach students with lower academic ability alongside other students in class	458	4.66	489	4.94
Teachers' excitement to teach students with a range of abilities in class	458	4.60	489	4.79
Teachers' pleasure that including students with a range of abilities will make them better teachers.	458	4.71	489	4.90
Teachers' happiness to have students who need assistance with their daily activities included in classrooms	458	4.96	489	5.12

Table 21. Teacher perspectives on the possibility of executing Inclusive Educational activities in control and experimental groups

Variables	Groups	Endline		Sig. (Difference) in endline comparing to control group	
		N	Mean		
Teachers' belief that all students regardless of their ability should be taught in regular classrooms	Trained teachers	66	5.47	.001	
	Experimental	All teachers	239	4.82	.162
		Control	250	4.58	
Teachers' belief that that inclusion is beneficial to all students socially	Trained teachers	66	5.71	.001	
	Experimental	All teachers	239	5.24	.020

	Control		250	4.85	
		Trained teachers	66	5.47	.003
		All teachers	239	4.97	.087
Teachers' belief that inclusion benefits all students academically	Experimental				
	Control		250	4.67	
		Trained teachers	66	5.56	.002
		All teachers	239	4.96	.211
Teachers' belief that all students can learn in inclusive classrooms if their teachers are willing to adapt the curriculum	Experimental				
	Control		250	4.75	
		Trained teachers	66	5.61	.001
		All teachers	239	5.08	.095
Teachers' pleasure to have the opportunity to teach students with lower academic ability alongside other students in class	Experimental				
	Control		250	4.80	
		Trained teachers	66	5.53	.000
		All teachers	239	4.89	.234
Teachers' excitement to teach students with a range of abilities in class	Experimental				
	Control		250	4.70	
		Trained teachers	66	5.65	.000
		All teachers	239	5.05	.069
Teachers' pleasure that including students with a range of abilities will make them better teachers.	Experimental				
	Control		250	4.76	
		Trained teachers	66	5.82	.000
		All teachers	239	5.35	.008
Teachers' happiness to have students who need assistance with their daily activities included in classrooms	Experimental				
	Control		250	4.90	

In evaluating educators' attitudes to the inclusion of students with diversities in regular schools, teachers were required to score their degree of agreement with statements about their attitudes in baseline and end line in a range of 7 from strongly disagree to strongly agree. The survey result shows considerable increases in the average consensus of teachers in their attitudes towards the benefits of Inclusive Education (rise from 4.79 to 5.04) as well as their excitement (4.60 to 4.79) and willingness (4.66 to 4.94) to teach students with different ranges of abilities. The most remarkable improvement has been seen in the level of pleasure of having the chance to teach students with lower academic ability alongside other students in class, showing teachers' willingness to the students with various learning capabilities improve in the end line. Comparing teachers in the two school groups, in terms of the statements of teachers' belief on the benefits of inclusion to all students socially, in addition to their happiness in having students who need assistance with their daily activities in their classroom, there were crucial differences in terms of statistics in the average agreement between teachers in two groups and between trained teachers and teachers in control schools (p -value < 0.05). Both statements received a consensus of slightly to moderate agreement by teachers in experimental groups while receiving a

score under 5 (undecided to slightly agree) in the control group. Besides, there were important differences seen between trained teachers and the control group in terms of teachers' belief that all students regardless of their ability should be taught in regular classrooms (p-value =0.001 < 0.05) as well as the benefits of inclusion to all students academically (p-value =0.003 < 0.05), while the differences in terms of those aspects between the overall experimental group and control group were not considered significant. A similar trend was recognized regarding teachers' pleasure to have the opportunity to teach students with lower academic ability or with students with diverse level of abilities as well as the belief that this kind of behavior would make them better teachers. One teacher remarked, "In my classroom, I have seen a remarkable improvement in student engagement and performance since implementing inclusive practices. For instance, I recently taught a unit on environmental science where I used group projects and interactive technology to ensure that all students, regardless of their learning levels, could contribute meaningfully and learn effectively."

Overall, the study highlighted the improvement in teachers' agreement on the benefits of inclusive education socially and academically as well as their excitement and readiness to teach students with different capabilities. The difference between the two groups further highlighted the efficiency of training programs in changing teachers' beliefs and views on Inclusive Education and their willingness to engage in inclusive activities.

2.2.4. Intention to Teach in Inclusive Classroom Scale (ITICS)

Table 22. *Teacher Intention to Teach in Inclusive Classroom*

Variables	Baseline		Endline	
	N	Mean	N	Mean
Teachers' intention to change the curriculum to meet the learning needs of a student with learning difficulty enrolled in class	458	4.45	489	4.53
Teachers' intention to consult with the parents of a student who is struggling in class	458	5.00	489	5.02
Teachers' intention to consult with colleagues to identify possible ways they can assist a struggling student in class	458	5.14	489	5.12
Teachers' intention to undertake a professional development program so they can teach students with diverse learning needs well	458	4.95	489	5.02
Teachers' intention to consult with a student who is displaying challenging behaviours to find out better ways to work with him/her	458	5.01	489	5.14
Teachers' intention to include students with severe disabilities in a range of social activities in class	458	4.65	489	4.76

Teachers' intention to change the assessment tasks to suit the learning profile of a student who is struggling (e.g., providing longer time to complete the task or modifying test questions)

458

5.02

489

5.14

Table 23. *Teacher Intention to Teach in Inclusive Classroom* in control and experimental groups

Variables	Groups	Endline		Sig. (Difference) in endline comparing to control group	
		N	Mean		
Teachers' intention to change the curriculum to meet the learning needs of a student with learning difficulty enrolled in class	Experimental	Trained teachers	66	5.20	.000
		All teachers	239	4.58	.512
	Control		250	4.49	
Teachers' intention to consult with the parents of a student who is struggling in class	Experimental	Trained teachers	66	5.61	.000
		All teachers	239	5.18	.020
	Control		250	4.87	
Teachers' intention to consult with colleagues to identify possible ways they can assist a struggling student in class	Experimental	Trained teachers	66	5.59	.001
		All teachers	239	5.26	.058
	Control		250	5.00	
Teachers' intention to undertake a professional development program so they can teach students with diverse learning needs well	Experimental	Trained teachers	66	5.50	.001
		All teachers	239	5.15	.045
	Control		250	4.89	
Teachers' intention to consult with a student who is displaying challenging behaviours to find out better ways to work with him/her	Experimental	Trained teachers	66	5.83	.000
		All teachers	239	5.41	.000
	Control		250	4.88	
Teachers' intention to include students with severe disabilities in a range of social activities in class	Experimental	Trained teachers	66	5.47	.000
		All teachers	239	5.00	.000
	Control		250	4.54	
Teachers' intention to change the assessment tasks to suit the learning profile of a student who is struggling (e.g., providing longer time to complete the task or modifying test questions)	Experimental	Trained teachers	66	5.94	.000
		All teachers	239	5.38	.000
	Control		250	4.90	

On a scale of 7 from extremely unlikely to likely, teachers are questioned about their intentions to include various activities in their inclusive classrooms. Between the baseline and end line, teachers are less likely to consult colleagues on ways to approach struggling students with a slight decrease in the likelihood of this intention from 5.14 to 5.12, showing that colleagues are not a considerable source of advice for teachers in approaching students. Instead, teachers, in the end line, are more likely to consult students themselves on how to work with them (rise from 5.01 to 5.14) as well as change their ways of assessing students struggling (from 5.02 to 5.14).

In terms of the experimental and control groups, there are statistical differences in the likelihood of undertaking certain activities in inclusive activities between teachers in the experimental group and the control group. Regarding the intention to consult parents (p-value = 0.000 for trained teachers and p-value = 0.020 for all experimental teachers), undertake programs (p-value = 0.001 for trained teachers and p-value = 0.045 for all experimental teachers), include struggling students in different class activities (p-value = 0.000 for trained teachers and p-value = 0.000 for all experimental teachers), consult challenging students (p-value = 0.000 for trained teachers and p-value = 0.000 for all experimental teachers) and intention to change assessment methods to suit struggling students (p-value = 0.000 for trained teachers and p-value = 0.000 for all experimental teachers), the result highlights statistically significant improvements in the likelihood of taking those positive activities by trained teachers and all teachers in experimental schools, while the average possibility of those intentions in teachers in control group range under 5 (not sure to somewhat likely). However, teachers' intention to change the curriculum to meet the learning needs of a student with learning difficulty and intention to consult with colleagues to identify possible ways they can assist a struggling student in class only showed significant differences between control group and trained teachers, with p-value were 0.000 and 0.001 respectively, while showed so important differences between all teachers in experimental group and the control group (p-value > 0.05).

In addressing the diverse needs of students, teachers often adopt several strategies aimed at improving their students' learning experiences and outcomes. In interview sections with teachers in the experimental schools, the teachers mentioned their significant approach is adapting the curriculum to meet the learning needs of a student with learning difficulty enrolled in class. For example, a teacher might incorporate more visual aids and hands-on activities to better support a student who struggles with traditional lecture methods. As one teacher stated, "I try to adapt the curriculum by integrating interactive activities like science experiments and group projects, which can help students with learning difficulties engage more effectively." Another crucial strategy involves teachers' intention to consult with the parents of a student who is struggling in class. One teacher noted, "I regularly meet with parents to discuss their child's progress and challenges. This partnership allows us to create a consistent support system both at school and home." Professional development is another area where teachers show intention to improve their ability to teach students with diverse learning needs. By undertaking specialized training programs, teachers can stay updated with the latest educational strategies. One teacher remarked, "I often attend school or subject meetings on instruction, which provided me with new techniques to better cater to students with different learning profiles." Inclusivity is another key intention, with teachers aiming to include students with severe disabilities in a range of social activities in class. This ensures that all students have the opportunity to interact and learn from each other. "I always ensure that students with severe disabilities are part of group activities and social events. It fosters a sense of community

and belonging among all students," a teacher emphasized. These strategies reflect teachers' commitment to fostering an inclusive and supportive educational environment for all students.

It can be concluded that between the baseline and the end line, there have been improvements in the possibility of teachers including or changing their ways of approaching struggling students. The importance and the obvious impact of training programs are strongly highlighted by the difference in the intentions of teachers in different groups.

2.2.5. Concerns About Inclusive Education

Table 24. Teacher Concern about Inclusive Education

Variables	Baseline		Endline	
	N	Mean	N	Mean
Teachers' concern about not having time to plan educational programs for students with disabilities	458	1.67	489	1.58
Teachers' concern about difficulty to maintain discipline in class	458	1.70	489	1.65
Teachers' concern about not having knowledge and skills required to teach students with disabilities	458	1.73	489	1.67
Teachers' concern about doing additional paperwork.	458	1.67	489	1.59
Teachers' concern that students with disabilities will not be accepted by students without disabilities	458	1.57	489	1.53
Teachers' concern that parents of children without disabilities may not like the idea of placing their children in the same classroom with students with disabilities.	458	1.77	489	1.73
Teachers' concern that the school will not have enough funds to implement inclusion successfully.	458	1.65	489	1.64
Teachers' concern that there will be inadequate para-professional staff available to support students with disabilities (e.g., speech pathologist, physiotherapist, Occupational therapist)	458	2.06	489	2.03
Teachers' concern about not receiving enough incentives (e.g., additional remuneration or allowance) to teach students with disabilities	458	1.57	489	1.56
Teachers' concern about increased workload	458	1.74	489	1.62
Teachers' concern that other school staff members will be stressed.	458	1.66	489	1.63
Teachers' concern that the school will have difficulty in accommodating students with various types of disabilities because of inappropriate infrastructure (e.g. architectural barriers)	458	1.86	489	1.79
Teachers' concern that there will be inadequate resources/special teacher staff available to support inclusion	458	1.93	489	1.83

Teachers' concern that the school will not have adequate special education instructional materials and teaching aids (e.g., Braille)	458	2.06	489	1.93
Teachers' concern that the overall academic standard of the school will suffer	458	1.69	489	1.57
Teachers' concern that their performance as a classroom teacher will decline	458	1.53	489	1.45
Teachers' concern that the academic achievement of students without disabilities will be affected	458	1.62	489	1.61
Teachers' concern that it will be difficult to give equal attention to all students in an inclusive classroom	458	1.79	489	1.75
Teachers' concern that they will not be able to cope with students with a disability who do not have adequate self-care skills (e.g., students who are not toilet trained)	458	2.01	489	1.90
Teachers' concern that there will be inadequate administrative support to implement the inclusive education program	458	1.90	489	1.78
Teachers' concern that the inclusion of a student with a disability in class will lead to a higher degree of anxiety and stress in them	458	1.71	489	1.62

Table 25. *Teacher Concern about Inclusive Education* in control and experimental groups

Variables	Groups	Endline		Sig. (Difference) in endline comparing to control group	
		N	Mean		
Teachers' concern about not having time to plan educational programs for students with disabilities	Experimental	Trained teachers	66	1.39	.01
		All teachers	239	1.54	.223
	Control	Trained teachers	66	1.15	.000
		All teachers	239	1.57	.017
Teachers' concern about difficulty to maintain discipline in class	Experimental	Trained teachers	66	1.24	.000
		All teachers	239	1.62	.126
	Control	Trained teachers	66	1.30	.000
		All teachers	239	1.54	.169
Teachers' concern about not having knowledge and skills required to teach students with disabilities	Experimental	Trained teachers	66	1.24	.000
		All teachers	239	1.62	.126
	Control	Trained teachers	66	1.30	.000
		All teachers	239	1.54	.169
Teachers' concern about doing additional paperwork.	Experimental	Trained teachers	66	1.30	.000
		All teachers	239	1.54	.169

	Control	250	1.63	
		Trained teachers	66	1.18
		All teachers	239	1.46
Teachers' concern that students with disabilities will not be accepted by students without disabilities	Experimental			.012
	Control	250	1.61	
		Trained teachers	66	1.56
		All teachers	239	1.71
Teachers' concern that parents of children without disabilities may not like the idea of placing their children in the same classroom with students with disabilities.	Experimental			.506
	Control	250	1.75	
		Trained teachers	66	1.47
		All teachers	239	1.62
Teachers' concern that the school will not have enough funds to implement inclusion successfully.	Experimental			.452
	Control	250	1.67	
		Trained teachers	66	1.89
		All teachers	239	2.10
Teachers' concern that there will be inadequate para-professional staff available to support students with disabilities (e.g., speech pathologist, physiotherapist, Occupational therapist)	Experimental			.091
	Control	250	1.96	
		Trained teachers	66	1.47
		All teachers	239	1.52
Teachers' concern about not receiving enough incentives (e.g., additional remuneration or allowance) to teach students with disabilities	Experimental			.279
	Control	250	1.60	
		Trained teachers	66	1.47
		All teachers	239	1.65
Teachers' concern about increased workload	Experimental			.849
	Control	250	1.64	
		Trained teachers	66	1.47
		All teachers	239	1.70
Teachers' concern that other school staff members will be stressed.	Experimental			.361
	Control	250	1.64	
		Trained teachers	66	1.61
		All teachers	239	1.85
Teachers' concern that the school will have difficulty in accommodating students with various types of disabilities because of inappropriate infrastructure (e.g. architectural barriers)	Experimental			.440
	Control	250	1.80	
		Trained teachers	66	1.71
		All teachers	239	1.91
Teachers' concern that there will be inadequate resources/special teacher staff available to support inclusion	Experimental			.249
	Control	250	1.82	

Teachers' concern that the school will not have adequate special education instructional materials and teaching aids (e.g., Braille)	Experimental	Trained teachers	66	1.80	.422
		All teachers	239	2.12	.011
	Control		250	1.90	
		Trained teachers	66	1.32	.000
Teachers' concern that the overall academic standard of the school will suffer	Experimental	All teachers	239	1.64	.720
		Control	250	1.62	
	Experimental	Trained teachers	66	1.35	.145
		All teachers	239	1.51	.773
Teachers' concern that their performance as a classroom teacher will decline	Control		250	1.49	
		Trained teachers	66	1.41	.051
Teachers' concern that the academic achievement of students without disabilities will be affected	Experimental	All teachers	239	1.62	.964
		Control	250	1.61	
	Experimental	Trained teachers	66	1.52	.078
		All teachers	239	1.82	.101
Teachers' concern that it will be difficult to give equal attention to all students in an inclusive classroom	Control		250	1.70	
		Trained teachers	66	1.70	.198
Teachers' concern that they will not be able to cope with students with a disability who do not have adequate self-care skills (e.g., students who are not toilet trained)	Experimental	All teachers	239	2.00	.093
		Control	250	1.86	
	Experimental	Trained teachers	66	1.55	.031
		All teachers	239	1.76	.608
Teachers' concern that there will be inadequate administrative support to implement the inclusive education program	Control		250	1.80	
		Trained teachers	66	1.50	.211
Teachers' concern that the inclusion of a student with a disability in class will lead to a higher degree of anxiety and stress in them	Experimental	All teachers	239	1.69	.354
		Control	250	1.63	

Regarding teachers' concerns about conducting inclusive education activities, ranging from 1-no concern to 4-extremely concerned, there were slight decreases in the overall level of concerns in 489 teachers surveyed. In terms of teachers' incentives and schools' availability of funds to conduct inclusive classrooms, there was a 0.1-point decrease in the average level of concerns, indicating that the motivations and the funds of the schools were not significantly

affected in both groups of teachers between baseline and end line. While the degree of concern of teachers regarding various aspects is under 2 points (ranging from no concern to a little concerned), the concern of inadequate para-professional staff available to support students with disabilities (e.g., speech pathologist, physiotherapist, Occupational therapist) have the highest level of concern from teachers, demonstrating a lack of professional parties working with students with disabilities.

In comparing teachers in experimental and control schools, there were significant changes in the way teachers view the difficulties in maintaining discipline (p-value = 0.000 for trained teachers and p-value = 0.017 for all experimental teachers) as well as the concern that students with disabilities will not be accepted by students without disabilities (p-value = 0.000 for trained teachers and p-value = 0.012 for all experimental teachers). Compared to control group, trained teachers in experimental groups were significantly less concerned about the skills and knowledge required to teach students with disabilities (p-value = 0.000 < 0.05) and the time to plan educational programs for students with disabilities (p-value = 0.010 < 0.05) along with the additional paperwork (p-value = 0.000 < 0.05). Similar trends of less concern of trained teachers compared to teachers in the control group were seen in terms of the sufferings of the overall academic standard of the school (p-value = 0.000 < 0.05) as well as the inadequate administrative support to implement the inclusive education program (p-value = 0.030 < 0.05). These importantly suggest that the training was efficient in equipping teachers in experimental groups with crucial knowledge and experiences to work with students with disabilities both in teaching and monitoring, as well as increasing the confidence of teachers about the acceptance of other students when including disabled students in class.

Regarding the worries on the overall performance of students, the availability of funds, resources and infrastructure to support from schools and other staff, and the stress, anxiety, and workload for themselves, teachers in both groups did not experience significant differences in their level of concern. Similar insignificant differences between the two groups were seen in teachers' concern about parents of children without disabilities may not like the idea of placing their children in the same classroom with students with disabilities or their inadequate incentives (e.g., additional remuneration or allowance) to teach students with disabilities, along with the concern that their performance as a classroom teacher or the academic achievement of students without disabilities will decline. In the two groups, there were not any important disparities regarding teachers' concern of equal attention given to all students of their ability to cope with students with a disability who do not have adequate self-care skills (e.g., students who are not toilet trained).

When participating in the interview section, teachers also mentioned the details of their concerns related to inclusive education with a range of issues that impact their ability to effectively teach students with disabilities. One common concern among teachers is the lack of time to plan educational programs for students with disabilities. The additional time required for individualized planning can be overwhelming. One teacher explained, "I want to create effective programs for my students with disabilities, but finding the time to plan these amidst my other responsibilities is a huge challenge." Teachers also express concern about not having the necessary knowledge and skills to teach students with disabilities. Many feel unprepared to meet these students' needs effectively. As one teacher noted, " I often feel unsure about how to best

support my students with disabilities." There is also anxiety about the social dynamics in the classroom, specifically whether students with disabilities will be accepted by their peers. One teacher commented, "I'm worried that my students with disabilities might feel isolated or not be accepted by their classmates." Teachers are also concerned that parents of children without disabilities might object to inclusive classrooms. "Some parents are not comfortable with the idea of their children being in the same class as students with disabilities, which can be a challenging situation to navigate," shared a teacher. The potential decline in the overall academic standard of the school is another concern. "I'm worried that focusing on inclusion might lead to a drop in our school's academic performance," said a teacher. These concerns highlight the need for comprehensive support, adequate training, and sufficient resources to successfully implement inclusive education programs.

Overall, it can be concluded that the concerns on professional support for the physical and mental health of students with disabilities were the largest concerns for teachers both in baseline and end line. In comparison between the two groups, the experimental groups are better equipped with knowledge and experience working with those students, leading to a decrease in their anxiety about increased workload or planning time as well as concerns about the possibility of support from schools and staff and the friendliness of other students in class.

2.2.6. Self-efficacy in Implementing Inclusive Practices Scale

Table 26. *Teacher Self-efficacy in Implementing Inclusive Practices*

Variables	Baseline		Endline	
	N	Mean	N	Mean
I can use a variety of assessment strategies (e.g., portfolio assessment, modified tests, performance-based assessment).	458	4.52	489	4.63
I am able to provide an alternate explanation or example when students are confused.	458	4.51	489	4.60
I am confident in designing learning tasks so that the individual needs of students with disabilities are accommodated.	458	4.27	489	4.40
I can accurately gauge student comprehension of what I have taught.	458	4.36	489	4.44
I can provide appropriate challenges for very capable students.	458	4.42	489	4.51
I am confident in my ability to get students to work together <i>in pairs or in small groups</i> .	458	4.31	489	4.42
I am confident in my ability to prevent disruptive behaviour in the classroom before it occurs.	458	4.34	489	4.44
I can control disruptive behaviour in the classroom.	458	4.34	489	4.46

I am able to calm a student who is disruptive or noisy.	458	4.38	489	4.44
I am able to get children to follow classroom rules.	458	4.35	489	4.49
I am confident when dealing with students who are physically aggressive.	458	4.30	489	4.41
I can make my expectations clear about student behaviour.	458	4.43	489	4.53
I can assist families in helping their children do well in school.	458	4.35	489	4.49
I can improve the learning of a student who is failing.	458	4.36	489	4.45
I am able to work jointly with other professionals and staff (e.g., aides, other teachers) to teach students with disabilities in the classroom.	458	4.40	489	4.49
I am confident in my ability to get parents involved in school activities of their children with disabilities.	458	4.25	489	4.40
I can collaborate with other professionals (e.g., itinerant teachers or speech pathologists) in designing educational plans for students with disabilities.	458	4.26	489	4.38
I am confident in informing others who know little about laws and policies relating to the inclusion of students with disabilities.	458	4.29	489	4.35

Table 27. *Teacher Self-efficacy in Implementing Inclusive Practices* in control and experimental groups

Variables	Groups	Endline		Sig. (Difference) in endline comparing to control group	
		N	Mean		
Teachers' opinion that they can use a variety of assessment strategies (e.g., portfolio assessment, modified tests, performance-based assessment)	Experimental	Trained teachers	66	4.91	.017
		All teachers	239	4.68	.311
	Control		250	4.59	
Teachers' opinion that they are able to provide an alternate explanation or example when students are confused	Experimental	Trained teachers	66	4.79	.077
		All teachers	239	4.65	.286
	Control		250	4.56	
Teachers' opinion that they are confident in designing learning tasks so that the	Experimental	Trained teachers	66	4.68	.028

individual needs of students with disabilities are accommodated	All teachers	239	4.44	.421
	Control	250	4.36	
Teachers' opinion that they can accurately gauge student comprehension of what they have taught.	Trained teachers	66	4.67	.108
	Experimental	239	4.45	.862
Teachers' opinion that they can provide appropriate challenges for very capable students.	Control	250	4.44	
	Trained teachers	66	4.79	.016
Teachers' opinion that they are confident in their ability to get students to work together in pairs or in small groups.	Experimental	239	4.57	.209
	Control	250	4.46	
Teachers' opinion that they are confident in their ability to prevent disruptive behaviour in the classroom before it occurs.	Trained teachers	66	4.74	.005
	Experimental	239	4.51	.068
Teachers' opinion that they are confident in their ability to prevent disruptive behaviour in the classroom before it occurs.	Control	250	4.34	
	Trained teachers	66	4.73	.016
Teachers' opinion that they can control disruptive behaviour in the classroom.	Experimental	239	4.51	.149
	Control	250	4.38	
Teachers' opinion that they can control disruptive behaviour in the classroom.	Trained teachers	66	4.73	.032
	Experimental	239	4.51	.304
Teachers' opinion that they are able to calm a student who is disruptive or noisy.	Control	250	4.42	
	Trained teachers	66	4.64	.087
Teachers' opinion that they are able to calm a student who is disruptive or noisy.	Experimental	239	4.51	.194
	Control	250	4.38	
Teachers' opinion that they are able to get children to follow classroom rules.	Trained teachers	66	4.70	.085
	Experimental	239	4.53	.388
Teachers' opinion that they are able to get children to follow classroom rules.	Control	250	4.45	
	Trained teachers	66	4.64	.046
Teachers' opinion that they are confident when dealing with students who are physically aggressive.	Experimental	239	4.49	.097
	Control	250	4.33	
Teachers' opinion that they can make their expectations clear about student	Experimental	239	4.49	.070
	Trained teachers	66	4.73	.070

behaviour.	All teachers	239	4.59	.219
	Control	250	4.48	
Teachers' opinion that they can assist families in helping their children do well in school.	Trained teachers	66	4.74	.035
	Experimental	239	4.54	.279
Teachers' opinion that they can improve the learning of a student who is failing.	Control	250	4.44	
	Trained teachers	66	4.62	.133
Teachers' opinion that they are able to work jointly with other professionals and staff (e.g., aides, other teachers) to teach students with disabilities in the classroom.	All teachers	239	4.49	.375
	Experimental	250	4.41	
Teachers' opinion that they are confident in my ability to get parents involved in school activities of their children with disabilities.	Control	66	4.70	.138
	Trained teachers	239	4.50	.881
Teachers' opinion that they can collaborate with other professionals (e.g., itinerant teachers or speech pathologists) in designing educational plans for students with disabilities.	Control	250	4.48	
	Trained teachers	66	4.62	.094
Teachers' opinion that they are confident in informing others who know little about laws and policies relating to the inclusion of students with disabilities.	All teachers	239	4.42	.618
	Experimental	250	4.38	
Teachers' opinion that they are confident in designing educational plans for students with disabilities.	Control	66	4.59	.183
	Trained teachers	239	4.36	.739
Teachers' opinion that they are confident in informing others who know little about laws and policies relating to the inclusion of students with disabilities.	Control	250	4.40	
	Trained teachers	66	4.58	.117
Teachers' opinion that they are confident in informing others who know little about laws and policies relating to the inclusion of students with disabilities.	All teachers	239	4.36	.837
	Experimental	250	4.34	

Inclusive education strives to create environments where all students, regardless of ability, can thrive. A crucial aspect of successful inclusive education is the self-efficacy of teachers, their belief in their ability to implement inclusive practices effectively. This part examines the self-efficacy of teachers in implementing inclusive practices, comparing baseline and endline data and assessing differences between experimental (trained teachers) and control groups by asking teachers to rate their agreements on various aspects of confidence in their ability to deliver inclusive activities effectively.

When comparing data between baseline and endline, about assessment strategies, teachers' confidence in utilizing diverse assessment strategies improved from baseline (Mean=4.52) to endline (Mean=4.63), indicating a positive shift in their belief in their ability to assess students effectively. There was also a noticeable enhancement in teachers' confidence in designing learning tasks to accommodate the individual needs of students with disabilities, with a rise from baseline

(Mean=4.27) to endline (Mean=4.40). A similar trend was seen in teacher's confidence in classroom management when teachers' confidence in managing classroom behavior and preventing disruptions increased overall, with improvements in several areas such as preventing disruptive behavior before it occurs and calming disruptive students. In terms of collaboration, teachers also exhibited increased confidence in collaborating with other professionals, working jointly with other staff, and engaging families in supporting their children's education. From baseline to endline, there was a notable increase in teachers' confidence levels: providing alternate explanations or examples improved from a mean of 4.51 to 4.60, while accurately gauging student comprehension rose from 4.36 to 4.44. Similarly, teachers' confidence in making expectations clear regarding student behavior increased from 4.43 to 4.53, indicating significant progress in their ability to deliver knowledge effectively.

Comparing the experimental and trained teachers to control groups provides insights into the effectiveness of training interventions on self-efficacy. While there were no statistically significant differences between all teachers in the experimental group and control group, trained teachers exhibited a higher mean score of 4.91 in their confidence on their ability to use *a variety of assessment strategies compared to 4.59 of control group* ($p\text{-value} = 0.017 < 0.05$); *they also showed a higher mean score of 4.68 compared to 4.36 in control group regarding their confidence in designing learning tasks so that the individual needs of students with disabilities are accommodated* ($p\text{-value} = 0.028 < 0.05$). *Despite no important disparities in the overall experimental group compared to control group, trained teachers displayed a higher level of confidence in their ability to provide appropriate challenges for very capable students* ($p\text{-value} = 0.016 < 0.05$), *ability to get students to work together in pairs or in small groups* ($p\text{-value} = 0.005 < 0.05$), *their ability to prevent* ($p\text{-value} = 0.016 < 0.05$) *or control* ($p\text{-value} = 0.032 < 0.05$) *disruptive behaviours in the classroom. Similar trend was observed in terms of trained teachers' confidence when dealing with students who are physically aggressive* ($p\text{-value} = 0.046 < 0.05$) *and assist families in helping their children do well in school* ($p\text{-value} = 0.035 < 0.05$).

Trained teachers and all teachers in the experimental group exhibited higher mean scores in their confidence to *make their expectations clear about student behaviours*, albeit not statistically significant compared to the control group (trained teachers: 4.73, experimental group: 4.59 and control group: 4.48). Trained teachers showed slightly higher confidence in *providing an alternate explanation or example when students are confused* (4.79 and 4.56) and *accurately gauging student comprehension of what they have taught* (4.67 and 4.44) compared to the control group, although the difference was not significant ($p\text{-value} > 0.05$). Similarly, trained teachers displayed marginally higher confidence in *calming a student who is disruptive or noisy* (4.64 and 4.38) and *getting children to follow classroom rules* (4.70 and 4.45), but again, these differences were not statistically significant. In addition, trained teachers tended to express greater confidence in collaborating with other professionals and engaging families in school activities, though the differences were not statistically significant. They were also showing more confidence in *informing others who know little about laws and policies relating to the inclusion of students with disabilities* (4.58 and 4.34), however, the difference was still not important.

In an interview in endline survey, a teacher emphasized the versatility of assessment strategies in their classroom, stating, "I believe in utilizing a range of assessment methods, from portfolios to performance-based evaluations. For instance, during our recent project on environmental sustainability, I asked students to compile a portfolio showcasing their research

findings, along with a presentation demonstrating their understanding of the topic." This teacher also highlighted their ability to provide alternate explanations or examples when students are confused. They elaborated, "In math class, if a student struggles with a concept like fractions, I offer various examples and analogies until they grasp the concept. For instance, I might use pizza slices to illustrate fraction division." Such concrete examples demonstrate the teacher's commitment to accommodating diverse learning needs and ensuring student comprehension.

In summary, the findings indicate a positive shift in teachers' self-efficacy in implementing inclusive practices between baseline and endline. While there were slight improvements in self-efficacy among trained teachers compared to the control group, these differences were not statistically significant across most measures. It suggests that while training interventions may contribute to enhancing self-efficacy, other factors may also influence teachers' beliefs in their ability to implement inclusive practices effectively.

2.2.7. Inclusive Practices Rating Scale

Table 28. *Teacher ratings on their abilities to conduct Inclusive Practices*

Variables	Baseline		Endline	
	N	Mean	N	Mean
Teachers' ratings on modifying instruction to meet the diverse learning needs of students. Note: This applies to children with and without special needs.	458	1.81	489	1.84
Teachers' ratings on planning instruction to address the strengths of students.	458	1.88	489	1.91
Teachers' ratings on relating learning activities to students' personal and family experiences.	458	1.83	489	1.88
Teachers' ratings on using a variety of instructional strategies within the learning activity to engage students	458	1.84	489	1.92
Teachers' ratings on planning instruction to address interests of students	458	1.81	489	1.87
Teachers' ratings on adapting materials and resources to meet diverse learning needs.	458	1.81	489	1.88
Teachers' ratings on designing learning experiences that connect prior content knowledge to new learning.	458	1.81	489	1.89
Teachers' ratings on selecting curricular materials and resources that align with student learning goals.	458	1.84	489	1.91
Teachers' ratings on providing equal opportunities for students to ask questions.	458	1.92	489	1.96
Teachers' ratings on providing students with opportunities to interact with peers.	458	1.94	489	1.97

Teachers' ratings on asking effective questions that match instructional goals.	458	1.90	489	1.94
Teachers' ratings on responding appropriately to students' questions/comments.	458	1.91	489	1.97
Teachers' ratings on articulating high expectations of students.	458	1.85	489	1.89
Teachers' ratings on using strategies to motivate learners.	458	1.84	489	1.92
Teachers' ratings on providing regular opportunities for students to collaborate with others.	458	1.90	489	1.96
Teachers' ratings on providing frequent and appropriate feedback during class activities.	458	1.87	489	1.96
Teachers' ratings on creating a safe learning environment where students feel encouraged to take risks.	458	1.87	489	1.95
Teachers' ratings on having established standards of conduct and they are clear to students.	458	1.89	489	1.96
Teachers' ratings on making test accommodations when necessary.	458	1.90	489	2.00
Teachers' ratings on collaborating with teammates to support student learning.	458	1.93	489	2.03
Teachers' ratings on regularly sharing information and/or best practices with colleagues to improve practice.	458	1.90	489	1.96
Teachers' ratings on engaging with families to share information and strategies to enhance student learning.	458	1.89	489	1.99
Teachers' ratings on encouraging students to reflect on what they have learned.	458	1.93	489	1.97
Teachers' ratings on using a variety of assessment strategies to measure student progress. Note: This item includes formative assessment.	458	1.87	489	1.96
Teachers' ratings on using a number of strategies to prevent behavioural disruption in class.	458	1.82	489	1.92
Teachers' ratings on making each student learn according to his/her ability and potential.	458	1.87	489	1.96

Table 29. *Teacher ratings on their abilities to conduct Inclusive Practices* in control and experimental groups

Variables	Groups	Endline		Sig. (Difference) in endline comparing to control group
		N	Mean	
Teachers' ratings on modifying instruction to meet the diverse learning needs of	Trained Experimental teachers	66	2.77	.000

students. Note: This applies to children with and without special needs.		All teachers	239	1.87	.332
	Control		250	1.80	
Teachers' ratings on planning instruction to address the strengths of students.		Trained teachers	66	2.73	.000
	Experimental	All teachers	239	1.96	.207
Teachers' ratings on relating learning activities to students' personal and family experiences.	Control		250	1.86	
		Trained teachers	66	2.52	.000
Teachers' ratings on using a variety of instructional strategies within the learning activity to engage students	Experimental	All teachers	239	1.91	.410
	Control		250	1.85	
Teachers' ratings on planning instruction to address interests of students		Trained teachers	66	2.56	.000
	Experimental	All teachers	239	1.94	.737
Teachers' ratings on adapting materials and resources to meet diverse learning needs.	Control		250	1.91	
		Trained teachers	66	2.56	.000
Teachers' ratings on designing learning experiences that connect prior content knowledge to new learning.	Experimental	All teachers	239	1.90	.299
	Control		250	1.83	
Teachers' ratings on selecting curricular materials and resources that align with student learning goals.		Trained teachers	66	2.59	.000
	Experimental	All teachers	239	1.92	.289
Teachers' ratings on providing equal opportunities for students to ask questions.	Control		250	1.84	
		Trained teachers	66	2.61	.000
Teachers' ratings on providing students with opportunities to interact with peers.	Experimental	All teachers	239	1.91	.582
	Control		250	1.87	
Teachers' ratings on providing equal opportunities for students to ask questions.		Trained teachers	66	2.61	.000
	Experimental	All teachers	239	1.93	.437
Teachers' ratings on providing equal opportunities for students to ask questions.	Control		250	1.88	
		Trained teachers	66	2.62	.000
Teachers' ratings on providing equal opportunities for students to ask questions.	Experimental	All teachers	239	1.99	.355
	Control		250	1.92	
Teachers' ratings on providing students with opportunities to interact with peers.	Experimental	Trained teachers	66	2.59	.000

		All teachers	239	2.00	.393
	Control		250	1.94	
		Trained teachers	66	2.61	.000
Teachers' ratings on asking effective questions that match instructional goals.	Experimental	All teachers	239	1.97	.518
	Control		250	1.92	
		Trained teachers	66	2.61	.000
Teachers' ratings on responding appropriately to students' questions/comments.	Experimental	All teachers	239	1.98	.712
	Control		250	1.96	
		Trained teachers	66	2.59	.000
Teachers' ratings on articulating high expectations of students.	Experimental	All teachers	239	1.94	.229
	Control		250	1.85	
		Trained teachers	66	2.62	.000
Teachers' ratings on using strategies to motivate learners.	Experimental	All teachers	239	1.96	.363
	Control		250	1.89	
		Trained teachers	66	2.68	.000
Teachers' ratings on providing regular opportunities for students to collaborate with others.	Experimental	All teachers	239	2.00	.256
	Control		250	1.92	
		Trained teachers	66	2.64	.000
Teachers' ratings on providing frequent and appropriate feedback during class activities.	Experimental	All teachers	239	1.97	.680
	Control		250	1.94	
		Trained teachers	66	2.58	.000
Teachers' ratings on creating a safe learning environment where students feel encouraged to take risks.	Experimental	All teachers	239	1.99	.232
	Control		250	1.90	
		Trained teachers	66	2.65	.000
Teachers' ratings on having established standards of conduct and they are clear to students.	Experimental	All teachers	239	2.02	.110
	Control		250	1.90	
Teachers' ratings on making test accommodations when necessary.	Experimental	Trained teachers	66	2.64	.000

		All teachers	239	2.03	.411
	Control		250	1.97	
		Trained teachers	66	2.70	.000
Teachers' ratings on collaborating with teammates to support student learning.	Experimental	All teachers	239	2.10	.069
	Control		250	1.96	
		Trained teachers	66	2.62	.000
Teachers' ratings on regularly sharing information and/or best practices with colleagues to improve practice.	Experimental	All teachers	239	2.04	.034
	Control		250	1.89	
		Trained teachers	66	2.67	.000
Teachers' ratings on engaging with families to share information and strategies to enhance student learning.	Experimental	All teachers	239	2.04	.165
	Control		250	1.94	
		Trained teachers	66	2.65	.000
Teachers' ratings on encouraging students to reflect on what they have learned.	Experimental	All teachers	239	2.03	.141
	Control		250	1.92	
		Trained teachers	66	2.67	.000
Teachers' ratings on using a variety of assessment strategies to measure student progress. Note: This item includes formative assessment.	Experimental	All teachers	239	2.01	.136
	Control		250	1.90	
		Trained teachers	66	2.59	.000
Teachers' ratings on using a number of strategies to prevent behavioural disruption in class.	Experimental	All teachers	239	1.96	.247
	Control		250	1.88	
		Trained teachers	66	2.62	.000
Teachers' ratings on making each student learn according to his/her ability and potential.	Experimental	All teachers	239	2.02	.104
	Control		250	1.90	

The self-rating scale presented in the study aims to assess teachers' implementation of inclusive classroom practices and their perceived impact on student outcomes. The scale ranges from Novice to Expert, with teachers rating their proficiency and the effectiveness of each practice.

Analysis of the baseline and endline data reveals several trends. Across various inclusive practices, there is a general improvement from baseline to endline, albeit with varying degrees of significance. For instance, teachers' ratings on modifying instruction to meet diverse learning needs show a slight increase from a mean of 1.81 at baseline to 1.84 at endline, indicating a

positive trend in addressing diverse student needs. Similarly, planning instruction to address student strengths saw an increase from 1.88 to 1.91, suggesting enhanced alignment between instruction and student strengths. However, not all practices experienced significant improvements throughout the two groups. For example, while the mean rating for providing equal opportunities for student questions increased from 1.92 to 1.96, the change was not statistically significant. This indicates a potential area for further development in ensuring equitable participation in classroom discussions.

Comparing the control and experimental groups provides additional insights into the effectiveness of targeted training interventions. Trained teachers and all teachers in the experimental group showed statistically significant differences in their regularly sharing information and/or best practices with colleagues to improve practice when compared to control group with the p-value were 0.000 and 0.034, respectively. All other elements in this part displayed significant differences from trained groups while there were no important differences between the overall experimental and control group.

Trained teachers in the experimental group generally exhibited higher mean ratings across inclusive practices compared to the control group. For instance, in modifying instruction to meet diverse needs, trained teachers had a mean rating of 2.77 compared to 1.87 for all teachers in the experimental group and 1.80 for control groups, indicating the positive impact of training on inclusive practice implementation with a significant difference between groups of trained teachers and control group (p-value = 0.000 <0.05). This trend was also observed in teachers' ratings on planning instruction to address the strengths of students and address interests of students and relating learning activities to students' personal and family experiences. However, the differences between the experimental and control groups were not statistically significant but only between the trained teachers and control group. Teachers' ratings on making test accommodations when necessary and using a variety of assessment strategies to measure student progress also displayed significant differences between trained teachers and the control group, with the p-values were both 0.000, with higher mean scores observed in trained teachers. Similarly, when comparing trained teachers and the control group, teachers' ratings on providing equal opportunities for students to ask questions (2.62 and 1.92) and providing students with opportunities to interact with peers (2.59 and 1.94) showed significant differences. In terms of adapting materials and resources to meet diverse learning needs, designing learning experiences that connect prior content knowledge to new learning and selecting curricular materials and resources that align with student learning goals, trained teachers also showed significant differences (p-values = 0.000) with higher mean scores of 2.59, 2.61 and 2.61 compared to 1.84, 1.87 and 1.88 in control group. In terms of collaboration with teammates and sharing information with families to enhance student learning, trained teachers also exhibited higher mean scores, 2.70 and 1.96 and 2.67 and 1.94, respectively, and those differences were considered significant.

In an interview with teachers in experimental schools, a teacher highlighted their approach to meeting the diverse learning needs of students, stating, "In my classroom, I prioritize modifying instruction to cater to each student's unique strengths and challenges. For example, during a recent literature unit, I offered different reading materials at varying levels of complexity to ensure that all students could access the content at their own pace." They further emphasized their commitment to planning instruction that resonates with students' personal experiences, noting, "When teaching history, I often integrate family stories or cultural traditions

into the lessons to make the content more relatable and engaging for students." These examples illustrate the teacher's dedication to creating inclusive and personalized learning experiences.

In conclusion, the result highlights the importance of ongoing professional development in promoting inclusive practices among teachers. While there are overall improvements in inclusive practice implementation from baseline to endline, targeted training interventions can lead to more significant enhancements.

2.2.8. Teachers' Gender Sensitivity

Table 30. Teachers' Gender Sensitivity

Variables	Baseline		Endline	
	N	Mean	N	Mean
Teachers' opinion that a good lesson plan considers the need of all genders in learning environment.	458	2.97	489	3.04
Teachers' opinion that while engaging students in school cultural programs, they give importance their aptitude rather than conceding their gender (male/female/transgender)	458	3.03	489	3.08
Teachers' opinion that it is a lame excuse not to come to school due to having common toilet facilities for boys and girls.	458	2.80	489	2.81
Teachers' opinion that they generally give admission of boys and girls in school although there is a provision for admission of third/transgender students.	458	2.55	489	2.58
Teachers' opinion that a female teacher support should be available for girl students in their puberty.	458	3.02	489	3.11
Teachers' opinion that a male teacher support should be available for boy students in their puberty.	458	3.00	489	3.09
Teachers' opinion that parents seem to prefer boys' education more.	458	2.47	489	2.34
Teachers' opinion that parents seem to prefer girls' education more.	458	2.42	489	2.45
Teachers' opinion that it is justified that due to their professional engagement, fathers cannot participate in the parents' meeting the way mothers can.	458	2.40	489	2.25
Teachers' opinion that boys' participation in education is more important than girls.	458	2.32	489	2.30

Table 31. Teachers' Gender Sensitivity in control and experimental groups

Variables	Groups	Endline	Sig. (Difference) in endline
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		N	Mean	comparing to control group
		66	3.17	.111
	Trained teachers			
Teachers' opinion that a good lesson plan considers the need of all genders in learning environment.	Experimental	239	3.05	.583
	Control	250	3.03	
	Trained teachers	66	3.20	.081
Teachers' opinion that while engaging students in school cultural programs, they give importance their aptitude rather than conceding their gender (male/female/transgender)	Experimental	239	3.10	.417
	Control	250	3.06	
	Trained teachers	66	2.88	.822
Teachers' opinion that it is a lame excuse not to come to school due to having common toilet facilities for boys and girls.	Experimental	239	2.77	.169
	Control	250	2.86	
	Trained teachers	66	2.50	.186
Teachers' opinion that they generally give admission of boys and girls in school although there is a provision for admission of third/transgender students.	Experimental	239	2.49	.013
	Control	250	2.67	
	Trained teachers	66	3.15	.673
Teachers' opinion that a female teacher support should be available for girl students in their puberty.	Experimental	239	3.10	.773
	Control	250	3.12	
	Trained teachers	66	3.09	.794
Teachers' opinion that a male teacher support should be available for boy students in their puberty.	Experimental	239	3.07	.440
	Control	250	3.11	
	Trained teachers	66	1.70	.000
Teachers' opinion that parents seem to prefer boys' education more.	Experimental	239	2.04	.000
	Control	250	2.63	
	Trained teachers	66	2.39	.114
Teachers' opinion that parents seem to prefer girls' education more.	Experimental	239	2.32	.000
	Control	250	2.57	
	Trained teachers	66	1.65	.000
Teachers' opinion that it is justified that due to their professional engagement, fathers cannot participate in the parents' meeting the way mothers can.	Experimental	239	1.95	.000
	Experimental	239	1.95	.000

	Control	250	2.54	
		Trained teachers	66	2.23
		All teachers	239	2.13
Teachers' opinion that boys' participation in education is more important than girls.	Experimental			.066
	Control	250	2.46	

Regarding teachers' sensitivity to differences in gender, they rated their agreement about 10 statements on a scale of 4. The results suggest a decrease in the average level of consensus among teachers in their opinions about fathers' ability to attend parents' meetings compared to mothers (decrease from 2.40 to 2.25). Similarly, opinions on the significance of education for boys compared to girls and the preference of parents for boys' education have undergone decreases in their average scores, from 2.32 to 2.30 and from 2.47 to 2.34, respectively. This indicates that between the baseline and endline, teachers agree less on the dominance and preference of boys' education over girls. Noticeably, they agree more on the importance of lesson plans based on the needs of all genders (score increases from 2.97 to 3.04) and the need to consider students based on their aptitudes, not their genders (rise from 3.03 to 3.08).

When comparing the two groups, the change in teachers' views on the roles of boys' education was highlighted by the statistical significance of trained teachers and experimental groups compared to control group on their opinions on parents' preference for boys' education (p-value $\sim 0 < 0.05$) and the abilities of fathers attending parents' meetings (p-value $\sim 0 < 0.05$). A significant difference between the two groups (p-value = 0.013 < 0.05) was seen in teachers' opinion that they generally give admission of boys and girls in school although there is a provision for admission of third/transgender students, showing that trained teachers and overall experimental groups agree significantly less than control groups, with the average level of agreement being 2.50 and 2.49, respectively, compared to the value of 2.67 in the control groups.

Regarding the availability of teachers' support for specific genders of the students, there was no statistically significant difference between the experimental and control group or between the group of trained teachers to control schools (p-value > 0.05), which means that the training didn't importantly change teachers' view on this availability of support. Comparing the baseline and endline, teachers' level of agreement that female teacher support should be available for girl students in their puberty or the same thing for male students, there were also increases in the average degree of agreement, from 3.02 to 3.11 and from 3.00 to 3.09, all those average scores were quite higher compared to other statements.

In interviews conducted with teachers from experimental schools, several shared their practical experiences concerning gender-inclusive teaching practices. One teacher emphasized, "In my classroom, I always ensure that my lesson plans cater to the diverse learning styles and needs of all genders. For instance, when teaching math, I include real-life examples that resonate with both boys and girls, ensuring everyone feels included and engaged." This reflects the teachers' commitment to gender equality in education. Similarly, another teacher highlighted the importance of prioritizing aptitude over gender in cultural programs, stating, "During our school's cultural programs, I focus on identifying and nurturing each student's individual talents and interests, regardless of their gender identity. For example, if a male student shows a keen interest in dance, I encourage him to participate in dance performances just as enthusiastically as I would with any female student." Regarding parental preferences for boys' education, a

teacher remarked, "While some parents may express a preference for their sons' education, our goal as educators is to emphasize the importance of equal opportunities for all children, regardless of gender. We strive to create a learning environment where every student feels valued and empowered to succeed." Furthermore, teachers also pay special attention to the involvement of fathers in parent meetings. One teacher stated, "While it's true that mothers often take a more active role in parent meetings due to various reasons, such as professional engagements, we believe that both parents play equally important roles in their child's education. We strive to accommodate different schedules and encourage fathers to participate whenever possible." This underscores the teachers' dedication to fostering parental involvement irrespective of gender norms.

The results from the survey indicate that the training was efficient in improving teachers' agreement on planning learning materials based on genders as well as assessing students based on their aptitudes instead of their genders. The results also highlight an increase in teachers' attention and focus on girls and transgender students by showing a significant difference between the two groups. However, there is an insignificant difference in teachers' average degree of agreement on the focus of parents on girls' education, indicating a concern of teachers about the concentration of parents on female education before or after training.

2.3. Classroom Observation

2.3.1. Student engagement in classroom

Table 32. baseline and end-line compared in terms of student engagement

	Baseline		Endline	
	N	Mean	N	Mean
Express their ideas in the class	80	3.28	80	3.48
Ask questions to teacher when feel difficult to understand	80	2.79	80	3.03
Ask questions to dig for deepening meaning	80	2.84	80	3.06
Remain silence throughout the contact period	80	2.59	80	2.14
Volunteer at least once/twice	80	3.15	80	3.40
Contribute to the class activities	80	3.50	80	3.64
Participate actively in class discussions	80	3.48	80	3.64
Involve in classroom activities with a mixed group without hesitation	80	3.16	80	3.28
Actively Participate in individual/pair/small group work	80	3.39	80	3.61
Interested to answer the questions asked by the teacher	80	3.54	80	3.68

Provide assistance to peers who require additional learning support	8 0	3.19	8 0	3.29
All learners are actively participating in classroom activities	8 0	3.40	8 0	3.54
Students irrespective of gender (boys, girls, and other genders) actively participate in the classroom activities	8 0	3.46	8 0	3.63
Girls are active in the classroom activities	8 0	3.49	8 0	3.61

In a range of 4 from Not at all to Most of the time, observers were required to rate the levels of activities observed in students. There was an increase from 3.28 to 3.48 between the baseline and endline about the observations of the level of students expressing their ideas in class. The level of questions being asked by students observed also increased significantly from 2.79 to 3.03 with the questions being asked when students faced difficulty and from 2.84 to 3.06 when students wanted to understand deeper. In addition, there was a decline in the level of silence throughout the class observed by the teachers from 2.59 to 2.14, showing that in endline, many observers saw an increase in the expressions and questions from students and significant decrease in the silence of students.

While the perceived level of volunteering and participating in class discussions also underwent significant increases (from 3.15 to 3.4 and 3.48 to 3.64, respectively), the level of contribution to class activities also experienced an increase from 3.50 to 3.64 from baseline to endline. Regarding the participation of students in group work, there was an increase in the level of students involved in classroom activities with a mixed group without hesitation (from 3.16 to 3.28), in addition to the fact that the behavior of actively participating in individual/pair/small group work experienced an increase in frequency. The assistance of students to other peers also underwent a significant increase in endline, along with the frequency of different genders actively engaging in in-class activities, especially the activeness of girl students (increased from 3.49 to 3.61).

Baseline: Control and Experimental Schools Compared

Table 33. Control and experimental schools compared in terms of student engagement

		N	Mean	S.D	Sig.
Express their ideas in the class	Experimental group	40	3.40	.632	.117
	Control group	40	3.15	.770	
Ask questions to teacher when feel difficult to understand	Experimental group	40	2.85	.802	.536
	Control group	40	2.73	.987	
Ask questions to dig for deepening meaning	Experimental group	40	2.83	.747	.888
	Control group	40	2.85	.834	

Remain silence throughout the contact period	Experimental group	40	2.65	1.051	.610
	Control group	40	2.53	1.132	
Volunteer at least once/twice	Experimental group	40	3.30	.966	.138
	Control group	40	3.00	.816	
Contribute to the class activities	Experimental group	40	3.65	.622	.072
	Control group	40	3.35	.834	
Participate actively in class discussions	Experimental group	40	3.63	.740	.092
	Control group	40	3.33	.829	
Involve in classroom activities with a mixed group without hesitation	Experimental group	40	3.13	1.017	.729
	Control group	40	3.20	.911	
Actively Participate in individual/pair/small group work	Experimental group	40	3.48	.751	.333
	Control group	40	3.30	.853	
Interested to answer the questions asked by the teacher	Experimental group	40	3.60	.709	.457
	Control group	40	3.48	.784	
Provide assistance to peers who require additional learning support	Experimental group	40	3.15	.770	.664
	Control group	40	3.23	.768	
All learners are actively participating in classroom activities	Experimental group	40	3.45	.639	.518
	Control group	40	3.35	.736	
Students irrespective of gender (boys, girls, and other genders) actively participate in the classroom activities	Experimental group	40	3.43	.984	.707
	Control group	40	3.50	.784	
Girls are active in the classroom activities	Experimental group	40	3.55	.597	.468
	Control group	40	3.43	.903	

Despite lower mean scores in experimental group compared to control group, the overall mean score of the classroom observation data showed no significant difference in the baseline in the observations questions being asked in understanding difficulty (2.85 and 2.73) or for deepening meaning (2.83 and 2.85), silence remained (2.65 and 2.53), volunteering (3.30 and 3.00), interest to answer question (3.60 and 3.48), and assistance to other peers (3.15 and 3.23), along with the level of engagement of girl students (3.55 and 3.43). Similar insignificant differences were also seen in the observations of students' participation, contribution and active involvement in individual/pair/small group work despite higher average scores in experimental group. Overall, this means that the experimental and control schools were homogeneous in terms of the characteristics we looked at through classroom observations in the initial stage before intervention.

End-line: Control and Experimental Schools Compared

Table 34. *End-line: Control and experimental schools compared in terms of student engagement*

		N	Mean	S.D	Sig.
Express their ideas in the class	Experimental group	40	3.53	.506	.456
	Control group	40	3.43	.675	
Ask questions to teacher when feel difficult to understand	Experimental group	40	3.28	.452	.000
	Control group	40	2.78	.698	
Ask questions to dig for deepening meaning	Experimental group	40	3.23	.577	.047
	Control group	40	2.90	.841	
Remain silence throughout the contact period	Experimental group	40	1.75	.494	.000
	Control group	40	2.53	.877	
Volunteer at least once/twice	Experimental group	40	3.53	.506	.095
	Control group	40	3.28	.784	
Contribute to the class activities	Experimental group	40	3.75	.439	.095
	Control group	40	3.53	.716	
Participate actively in class discussions	Experimental group	40	3.88	.335	.001
	Control group	40	3.40	.744	
Involve in classroom activities with a mixed group without hesitation	Experimental group	40	3.43	.781	.098
	Control group	40	3.13	.822	
Actively Participate in individual/pair/small group work	Experimental group	40	3.75	.439	.050
	Control group	40	3.48	.751	
Interested to answer the questions asked by the teacher	Experimental group	40	3.78	.423	.117
	Control group	40	3.58	.675	
Provide assistance to peers who require additional learning support	Experimental group	40	3.38	.586	.251
	Control group	40	3.20	.758	
All learners are actively participating in classroom activities	Experimental group	40	3.68	.474	.053
	Control group	40	3.40	.744	
Students irrespective of gender (boys, girls, and other genders) actively participate in the classroom activities	Experimental group	40	3.78	.423	.056
	Control group	40	3.48	.877	
Girls are active in the classroom activities	Experimental group	40	3.68	.526	.375
	Control group	40	3.55	.714	

Regarding the examination of observation results in the endline, there was a statistically significant difference in the activeness of all learners when participating in individual/pair/small group work between experimental and control groups (p-value = 0.05) where the experimental group showed much higher mean scores of 3.75 compared to the value of 3.48 in the control group, while the activeness of students' participation in class discussions also showed higher mean scores in experimental group of 3.88 compared to 3.40 in control group, and this difference was considered significant statistically (p-value = 0.001 < 0.05). Students' behaviours of asking questions when feeling difficult to understand also displayed significant differences.

between the two groups ($p\text{-value} = 0.000 < 0.05$), with the mean scores of the experimental and control groups being 3.28 and 2.78 respectively. In addition, their behaviours of asking questions for deepening meaning also showed statistical difference between the two groups with $p\text{-value} = 0.047 < 0.05$, and then means were 3.23 and 2.90, respectively, showing students higher interest in understanding the contents conveyed by teachers from experimental group. The silence of students underwent significant differences ($p\text{-value} = 0.000 < 0.05$) with a much less frequency in experimental group (1.75) compared to 2.53 in control group.

About the difference in genders, the activeness of girls in experimental groups also had a noticeably higher mean score compared to control groups, 3.68 and 3.55, respectively, however, this difference was considered insignificant ($p\text{-value} > 0.05$). In terms of students irrespective of gender actively participating in class activities, there was an insignificant difference between the two groups ($p\text{-value} > 0.05$), with a higher mean score of the experimental group (3.78 and 3.48). A similar trend was observed through the mean scores of the expressions of ideas of students with the higher mean score of the experimental group (3.53) compared to the control group (3.43), however, the difference was considered insignificant. Other observations also showed no significant differences between the two groups regarding volunteering or interest to answer questions by teachers or assistance provided to other peers. The results indicate that the training was efficient in changing the frequency of participation of students in class discussions, along with the questions being asked by students when facing difficulty or for deeper understanding. However, there weren't significant changes in terms of changing the activeness of students from different genders, especially girls, volunteering and interest in answering the questions asked by teachers in class.

2.3.2. Classroom instruction

Table 35. baseline and end-line compared in terms of classroom instruction

	Baseline		Endline	
	N	Mean	N	Mean
Teacher uses multiple teaching-learning techniques in classroom	80	3.64	80	3.86
Teacher uses multisensory teaching materials	80	3.70	80	3.91
Teacher ensures students' participation	80	3.81	80	4
Teacher can manage large classroom	80	3.74	80	3.91

In examining classroom instruction, across various indicators, there was a noticeable improvement in teacher practices and classroom dynamics. The use of multiple teaching-learning techniques by teachers increased significantly from a mean of 3.64 at baseline to 3.86 at endline. Similarly, the utilization of multisensory

teaching materials saw an enhancement, with the mean rising from 3.70 to 3.91. This suggests a more varied and engaging approach to instruction, catering to diverse learning styles.

Teachers' mean score in ensuring students' participation rose from 3.81 to a perfect 4.00 by the endline, indicating a high level of engagement and involvement of students in the learning process. Furthermore, the ability of teachers to manage large classrooms showed enhancement, with the mean score increasing from 3.74 to 3.91. This suggests more effective inclusive classroom management strategies being implemented, resulting in a conducive learning environment for all students.

Baseline: Control and Experimental Schools Compared

Table 36. *Baseline: Control and experimental schools compared in terms of classroom instruction*

Observable behaviours		N	Mean	S.D	Sig.
Teacher uses multiple teaching-learning techniques in classroom	Experimental group	40	3.68	.474	.550
	Control group	40	3.60	.632	
Teacher uses multisensory teaching materials	Experimental group	40	3.70	.464	1.000
	Control group	40	3.70	.608	
Teacher ensures students' participation	Experimental group	40	3.83	.446	.827
	Control group	40	3.80	.564	
Teacher can manage large classroom	Experimental group	40	3.75	.630	.861
	Control group	40	3.73	.640	

Regarding classroom instruction, the overall mean scores on the observation of observers did not differ significantly between the experimental and control groups in the baseline. Despite higher mean scores in the observation of teachers' ensuring student engagement and their use of multisensory teaching materials, the differences were not statistically important. It can be concluded that there were no significant differences in the observed classroom instructional practices between the experimental and control schools at the baseline stage. This suggests that the two groups were fairly homogeneous in terms of classroom instruction before any intervention took place.

End-line: Control and Experimental Schools Compared

Table 37. *End-line: Control and experimental schools compared in terms of classroom instruction*

Observable behaviours		N	Mean	S.D	Sig.
Teacher uses multiple teaching-learning techniques in classroom	Experimental group	40	3.85	.362	.749
	Control group	40	3.88	.335	
Teacher uses multisensory teaching materials	Experimental group	40	3.90	.304	.697

	Control group	40	3.93	.267	
Teacher ensures students' participation	Experimental group	40	4.00	.000 ^a	
	Control group	40	4.00	.000 ^a	
Teacher can manage large classroom	Experimental group	40	3.90	.304	.697
	Control group	40	3.93	.267	

(a. t cannot be computed because the standard deviations of both groups are 0.)

Analyzing classroom instruction, a similar trend was observed regarding the frequency of certain activities at the end-line. There was also no significant difference between experimental and control groups at the end-line concerning the teacher's use of multiple teaching-learning techniques (Mean = 3.85 and Mean = 3.88) and multisensory teaching materials (Mean = 3.90 and Mean = 3.93) in the classroom, despite higher means observed in the experimental groups. Additionally, there was no statistically significant difference, nor a difference in the mean scores of the two groups in the abilities of teachers to manage large classrooms. This indicates that the training did not seem efficient in improving class instruction, such as management, the use of learning techniques and materials, as well as ensuring students' participation.

2.3.3. Classroom Assessment

Table 38. *baseline and end-line compared in terms of classroom assessment*

	Baseline		Endline	
	N	Mean	N	Mean
Teacher makes the learning objective or purpose clear to the students	80	3.74	80	3.99
Students are assessed through verbal questions	80	3.66	80	3.71
Teacher uses assessment methods or techniques other than questioning (e.g., presentation, class work, group work)	80	3.64	80	3.86
Students are evaluated through classwork during the class	80	3.66	80	3.76
Alternative assessment techniques are used for students who need additional support in learning (e.g., special need, ethnicity)	80	3.44	80	3.63
Self-assessment happens in the classroom	80	3.45	80	3.69
Students do not get scope for assessing their peers	80	2.70	80	2.15
Classroom assessment is well integrated into teaching-learning activities	80	3.59	80	3.76

Teacher uses ICT for assessing students	80	3.49	80	3.56
Teacher assessed maximum number of students in classroom	80	3.61	80	3.71
Teacher gives students reasonable time to answer the questions	80	3.73	80	3.85
Students irrespective of gender (boys, girls, and other gender) actively participate in assessment activities.	80	3.76	80	3.9
Only a few students were active in learning assessment	80	3.10	80	2.48
Mostly boys are active in assessment activities	80	2.83	80	2.4
Mostly girls are active in assessment activities	80	2.76	80	2.41
Students receive useful feedback from the teacher	80	3.80	80	3.89
Students with different abilities receive useful feedback from teachers	80	3.69	80	3.86

In analyzing classroom assessment practices, a comparison between baseline and end-line observations reveals notable trends and improvements. Teachers' clear explanation regarding learning objectives showed a significant enhancement, with the mean score rising from 3.74 at baseline to 3.99 at endline. This suggests an improvement in communicating the purpose and expectations of learning activities to students. While the mean score for assessing students through verbal questions increased slightly from 3.66 to 3.71, there was an increase in the utilization of assessment methods other than questioning. The mean score in this aspect rose from 3.64 to 3.86, indicating a broader range of assessment techniques being used, such as presentations, classwork, and group work. Moreover, there was an improvement in students' participation in assessment activities, regardless of gender. The mean score increased from 3.76 to 3.9, suggesting a more inclusive approach to assessment practices. Besides, the mean scores for students receiving feedback from teachers and students with different abilities receiving useful feedback increased from baseline to endline.

However, there were areas that saw a decline in performance. The mean score for students not assessing their peers decreased from 2.70 to 2.15, indicating a reduction in opportunities for peer assessment. Similarly, the mean scores for the active involvement of few students in learning assessment and the predominance of boys in assessment activities also decreased from baseline to endline.

Overall, while there were improvements in certain aspects of classroom assessment, such as clarity of learning objectives and diversity of assessment methods, there were also areas that witnessed a decline, emphasizing the need for a more balanced and inclusive approach to assessment practices.

Baseline: Control and Experimental Schools Compared

Table 39. *Baseline: Control and experimental schools compared in terms of classroom assessment*

		N	Mean	S.D	Sig.
Teacher makes the learning objective or purpose clear to the students	Experimental group	40	3.70	.516	.558
	Control group	40	3.78	.620	
Students are assessed through verbal questions	Experimental group	40	3.73	.506	.350
	Control group	40	3.60	.672	
Teacher uses assessment methods or techniques other than questioning (e.g., presentation, class work, group work)	Experimental group	40	3.75	.494	.094
	Control group	40	3.53	.679	
Students are evaluated through classwork during the class	Experimental group	40	3.68	.526	.852
	Control group	40	3.65	.662	
Alternative assessment techniques are used for students who need additional support in learning (e.g., special need, ethnicity)	Experimental group	40	3.40	.709	.655
	Control group	40	3.48	.784	
Self-assessment happens in the classroom	Experimental group	40	3.53	.554	.293
	Control group	40	3.38	.705	
Students do not get scope for assessing their peers	Experimental group	40	2.70	1.114	1.000
	Control group	40	2.70	1.324	
Classroom assessment is well integrated into teaching-learning activities	Experimental group	40	3.65	.533	.407
	Control group	40	3.53	.784	
Teacher uses ICT for assessing students	Experimental group	40	3.48	.716	.873
	Control group	40	3.50	.679	
Teacher assessed maximum number of students in classroom	Experimental group	40	3.73	.554	.120
	Control group	40	3.50	.716	
Teacher gives students reasonable time to answer the questions	Experimental group	40	3.83	.501	.134
	Control group	40	3.63	.667	
Students irrespective of gender (boys, girls, and other gender) actively participate in assessment activities.	Experimental group	40	3.80	.516	.580
	Control group	40	3.73	.679	
Only a few students were active in learning assessment	Experimental group	40	3.03	.947	.512
	Control group	40	3.18	1.083	

Mostly boys are active in assessment activities	Experimental group	40	2.73	1.219	.471
	Control group	40	2.93	1.248	
Mostly girls are active in assessment activities	Experimental group	40	2.60	1.172	.225
	Control group	40	2.93	1.207	
Students receive useful feedback from the teacher	Experimental group	40	3.83	.501	.704
	Control group	40	3.78	.660	
Students with different abilities receive useful feedback from teachers	Experimental group	40	3.78	.577	.257
	Control group	40	3.60	.778	

All observable behaviors in terms of classroom assessment displayed no significant differences between the two groups in the baseline. In terms students' self-assessment in the classroom ($p > 0.05$), experimental group had a higher mean score of 3.53, compared to 3.38 in the control group, however, the difference was considered insignificant. In addition, in terms of the integration of classroom assessment into teaching-learning activities, the observation results also showed an unimportant difference ($p\text{-value} > 0.05$), with a higher mean score in the experimental group (3.65 compared to 3.53). A similar trend was seen in teachers' effort to assess maximum number of students in the class, with mean scores were 3.73 and 3.50 in experimental and control groups, respectively, however, the differences were again not statistical significant. Despite the higher average scores in the observations of the experimental group in terms of teachers' giving students reasonable time to answer the question, there were no significant differences between the two groups. Similarly, no important differences were seen in the observations of the two groups in terms of useful feedback received by all students and by students with different abilities specifically despite higher mean scores in experimental group.

The behaviors of verbal or classwork assessment between the two groups also differed insignificantly in the baseline. The different methods being used as well as the use of ICT for assessment were also observed with no significant differences, along with the dominance of boys or girls in assessment activities, despite higher mean scores in the control group.

End-line: Control and Experimental Schools Compared

Table 40. *End-line: Control and experimental schools compared in terms of classroom assessment*

		N	Mean	S.D	Sig.
Teacher makes the learning objective or purpose clear to the students	Experimental group	40	4.00	0.000	.323
	Control group	40	3.98	.158	
Students are assessed through verbal questions	Experimental group	40	3.65	.533	.249
	Control group	40	3.78	.423	

Teacher uses assessment methods or techniques other than questioning (e.g., presentation, class work, group work)	Experimental group	40	3.85	.362	.749
	Control group	40	3.88	.335	
Students are evaluated through classwork during the class	Experimental group	40	3.78	.423	.796
	Control group	40	3.75	.439	
Alternative assessment techniques are used for students who need additional support in learning (e.g., special need, ethnicity)	Experimental group	40	3.63	.490	1.000
	Control group	40	3.63	.490	
Self-assessment happens in the classroom	Experimental group	40	3.63	.540	.259
	Control group	40	3.75	.439	
Students do not get scope for assessing their peers	Experimental group	40	2.03	.891	.217
	Control group	40	2.28	.905	
Classroom assessment is well integrated into teaching-learning activities	Experimental group	40	3.80	.405	.437
	Control group	40	3.73	.452	
Teacher uses ICT for assessing students	Experimental group	40	3.53	.599	.544
	Control group	40	3.60	.496	
Teacher assessed maximum number of students in classroom	Experimental group	40	3.70	.516	.818
	Control group	40	3.73	.452	
Teacher gives students reasonable time to answer the questions	Experimental group	40	3.78	.480	.089
	Control group	40	3.93	.267	
Students irrespective of gender (boys, girls, and other gender) actively participate in assessment activities.	Experimental group	40	3.88	.335	.462
	Control group	40	3.93	.267	
Only a few students were active in learning assessment	Experimental group	40	2.50	.934	.808
	Control group	40	2.45	.904	
Mostly boys are active in assessment activities	Experimental group	40	2.10	.900	.011
	Control group	40	2.70	1.137	
Mostly girls are active in assessment activities	Experimental group	40	2.28	1.012	.234
	Control group	40	2.55	1.037	
Students receive useful feedback from the teacher	Experimental group	40	3.83	.385	.080
	Control group	40	3.95	.221	
Students with different abilities receive useful feedback from teachers	Experimental group	40	3.88	.404	.771

Control group 40 3.85 .362

In the end-line comparison between control and experimental schools in terms classroom assessment, several trends can be observed. A significant difference was found between the experimental and control groups ($p = 0.011 < 0.05$) regarding the dominance of boys in activeness in assessment activities, indicating a more balance in genders when participating in assessment activities in the experimental group.

On the other hand, regarding the clarity of learning objectives and purpose conveyed by teachers, there was an insignificant difference between the experimental and control groups ($p = 0.323 > 0.05$), with a higher mean score of experimental group (4.0 and 3.98). There was an insignificant difference ($p > 0.05$), the experimental group (mean = 2.50) reported fewer students being active in learning assessment compared to the control group (mean = 2.45). In addition, an insignificant difference was found between the experimental and control groups ($p > 0.05$) regarding the dominance of girls in activeness in assessment activities. The experimental group (mean = 2.28) exhibited less frequency of this dominance compared to the control group (mean = 2.55). A similar trend was seen in the assessment methods or techniques other than questioning (e.g., presentation, class work, group work) being used by teachers, where there was no significant difference observed, where the experimental group (mean = 3.85) had a lower mean score compared to the control group (mean = 3.88). In terms of teachers' use of ICT for assessment, there was no statistically significant difference ($p = 0.544$) between the experimental and control groups, indicating similar levels of the use of ICT in assessing activities. Moreover, there was an insignificant difference ($p = 0.089$) regarding the reasonable time teachers were giving for students to answer the question, with the experimental group (mean = 3.78) compared to the control group (mean = 3.93). There was an insignificant difference observed ($p = 0.771$) with the experimental group (mean = 3.88) showing higher useful feedback that students with different abilities received from teachers compared to the control group (mean = 3.85) despite this difference was not significant.

2.3.4. ICT Integration in classroom

Table 41. baseline and end-line compared in terms of ICT Integration in classroom

	Baseline		Endline	
	N	Mean	N	Mean
Students have referred online originated information in the class discussion	80	3.11	80	3.24
Only a few students have access to ICT facilities in the classroom	80	2.76	80	2.31
Students use ICT facilities in classroom for their active participations	80	3.39	80	3.79

Students irrespective of gender (boys, girls, and other genders) use ICT for participating in classroom activities.	80	3.43	80	3.88
Arrangements are available for students who need additional learning support (e.g., special need, slow learner, ethnicity) for integrating ICT in learning	80	3.36	80	3.28
Teacher integrates available ICT facilities to engage students	80	3.70	80	3.91
Teacher takes alternative measures for the student(s) with special needs for enhancing learning by integrating available ICT facilities	80	3.48	80	3.66
Girls are using ICT in classroom more than boys	80	2.86	80	2.39

Regarding the integration of Information and Communication Technology (ICT) into classroom activities, there was a slight increase in students referring to online-originated information during class discussions, with the mean score rising from 3.11 to 3.24. The mean score for few students having access to ICT facilities decreased from 2.76 to 2.31, indicating that digital resources were exposed to more students between baseline and endline. Similarly, there was a significant increase in students using ICT facilities for active participation, with the mean score increasing from 3.39 to 3.79. This suggests an improvement in the utilization of available ICT resources by students to engage in classroom activities.

Moreover, there was a notable increase in the inclusive use of ICT by students, irrespective of gender. The mean score rose from 3.43 to 3.88, indicating a more equal chance and ability of ICT usage among all genders in the classroom. Regarding support for students needing additional learning assistance, there was a decrease in the mean score for arrangements available for integrating ICT into learning, from 3.36 to 3.28. However, teachers showed improved integration of available ICT facilities to engage students, with the mean score increasing from 3.70 to 3.91. Additionally, alternative measures for students with special needs also saw enhancement, with the mean score rising from 3.48 to 3.66. There was also a significant change in the usage of ICT when comparing between girls and boys, with the mean scores of higher use from girls decreased from 2.86 to 2.39.

Baseline: Control and Experimental Schools Compared

Table 42. *Baseline: Control and experimental schools compared in terms of ICT Integration in classroom*

		N	Mean	S.D	Sig.
Students have referred online originated information in the class discussion	Experimental group	40	3.05	.904	.518
	Control group	40	3.18	.813	
Only a few students have access to ICT facilities in the classroom	Experimental group	40	2.65	1.272	.437

	Control group	40	2.88	1.305	
Students use ICT facilities in classroom for their active participations	Experimental group	40	3.23	1.000	.121
	Control group	40	3.55	.846	
Students irrespective of gender (boys, girls, and other genders) use ICT for participating in classroom activities.	Experimental group	40	3.25	1.080	.101
	Control group	40	3.60	.778	
Arrangements are available for students who need additional learning support (e.g., special need, slow learner, ethnicity) for integrating ICT in learning	Experimental group	40	3.23	.891	.161
	Control group	40	3.50	.847	
Teacher integrates available ICT facilities to engage students	Experimental group	40	3.70	.687	1.000
	Control group	40	3.70	.723	
Teacher takes alternative measures for the student(s) with special needs for enhancing learning by integrating available ICT facilities	Experimental group	40	3.40	.810	.452
	Control group	40	3.55	.959	
Girls are using ICT in classroom more than boys	Experimental group	40	2.58	1.299	.047
	Control group	40	3.15	1.252	

In the baseline, there was a significant difference between the observations in the experimental and control groups in terms of the dominance of girls in using ICT in classrooms when comparing to boys, with $p\text{-value} = 0.047 < 0.05$ and mean scores are 2.58 and 3.15 in experimental and control groups, respectively.

Other observable behaviors displayed no significant differences between the two groups. In terms students' use of ICT facilities in the classroom for their active participation ($p\text{-value} > 0.05$), experimental groups had a lower mean score of 3.23, compared to 3.55 in the control group. In addition, in terms of this use of ICT facilities, the use of students irrespective of their genders also showed an unimportant difference ($p\text{-value} > 0.05$), with a lower mean score in the experimental group (3.23 compared to 3.60). Despite the lower average scores in the observations of the experimental group in terms of access to ICT facilities in the classroom by only a few students and students' reference of online originated information in the class discussion, there were no significant differences between the two groups regarding those two behaviors. Similarly, no important differences were seen in the observations of the two groups in terms of teacher's integration of available ICT facilities to engage students or teacher's taking alternative measures for the student(s) with special needs for enhancing learning by integrating available ICT facilities despite lower mean scores in experimental group.

End-line: Control and Experimental Schools Compared

Table 43. End-line: Control and experimental schools compared in terms of ICT Integration in classroom

Observable behaviours		N	Mean	S.D	Sig.
Students have referred online originated information in the class discussion	Experimental group	40	3.10	.709	.047
	Control group	40	3.38	.490	
Only a few students have access to ICT facilities in the classroom	Experimental group	40	2.25	.981	.589
	Control group	40	2.38	1.079	
Students use ICT facilities in classroom for their active participations	Experimental group	40	3.85	.362	.176
	Control group	40	3.73	.452	
Students irrespective of gender (boys, girls, and other genders) use ICT for participating in classroom activities.	Experimental group	40	3.93	.267	.181
	Control group	40	3.83	.385	
Arrangements are available for students who need additional learning support (e.g., special need, slow learner, ethnicity) for integrating ICT in learning	Experimental group	40	3.35	.700	.382
	Control group	40	3.20	.823	
Teacher integrates available ICT facilities to engage students	Experimental group	40	3.95	.221	.241
	Control group	40	3.88	.335	
Teacher takes alternative measures for the student(s) with special needs for enhancing learning by integrating available ICT facilities	Experimental group	40	3.63	.540	.507
	Control group	40	3.70	.464	
Girls are using ICT in classroom more than boys	Experimental group	40	2.20	.992	.098
	Control group	40	2.58	1.010	

In the end-line comparison between control and experimental schools in terms of ICT integration in the classroom, regarding the use of online-originated information in discussion, there was a statistically significant difference between the experimental and control groups ($p = 0.047 < 0.05$). The experimental group showed lower levels of referencing online information in classroom discussions (3.10 and 3.38).

However, there was an insignificant difference ($p > 0.05$), the experimental group (mean = 2.25) reported slightly more students having access to ICT facilities compared to the control group (mean = 2.38). In addition, there was an insignificant difference between the experimental and control groups ($p = > 0.05$) regarding teacher's integration of available ICT facilities to engage students despite higher mean score of the experimental group (3.95 and 3.88). About gender disparity in ICT usage, an insignificant difference was observed ($p > 0.05$), even though girls in the experimental group (mean = 2.20) used ICT in the classroom more than boys, whereas

in the control group (mean = 2.58), the difference was more pronounced.

In terms of support for additional learning needs, there was no statistically significant difference ($p = 0.382$) between the experimental and control groups, indicating similar levels of arrangements for students needing additional learning support in integrating ICT. Moreover, there was an insignificant difference ($p = 0.176$) regarding students' use of ICT facilities in classroom for their active participations, with the experimental group (mean = 3.85) compared to the control group (mean = 3.73). There was an insignificant difference observed ($p\text{-value} = 0.181$) with the experimental group (mean = 3.93) showing a higher tendency for gender-neutral ICT use compared to the control group (mean = 3.83).

2.3.5. Gender and inclusivity in classroom

Table 44. baseline and end-line compared in terms of gender and inclusivity in classroom

	Baseline		Endline	
	N	Mean	N	Mean
Boys act as leader in the class	77	2.39	80	1.96
Only the Class captain/class representative plays lead role in the class	78	2.32	80	2.00
Girl students are treated with disrespectful behaviour (Bully, verbal attack, name calling etc.)	77	1.68	80	1.33
Teacher asks directive questions to the male students mainly	77	1.68	80	1.41
Teacher asks questions to the female students mainly	77	1.70	80	1.41
Teacher asks questions to the students irrespective of gender	75	3.47	80	3.68

In analyzing observations about gender and inclusivity, there was a decrease in the perception of dominant roles of boys in classrooms from 2.39 in baseline to 1.96 in endline, which means girls have been encouraged more to lead the class. Also, more equality was seen in the leadership abilities of different students where mean scores of the lead roles of only the class captain/ class representative underwent a notable decrease from 2.32 to 2.00, demonstrating equal opportunities given to different students in leadership activities. Regarding disrespectful behaviors such as bullying, verbal attack, or name calling towards girls, observers saw a downward trend from 1.68 to 1.33 in the frequency of those behaviors, showing an increased respect for girls students in class.

Regarding teachers' behaviours towards students of different genders, there was a decrease in the observations of teachers asking questions mainly towards female students from 1.70 to 1.41, while there was a decrease in the frequency of focused questions specific to boys from 1.68 in baseline to 1.41 in endline.

Baseline: Control and Experimental Schools Compared

Table 45. *Baseline: Control and experimental schools compared in terms of gender and inclusivity in classroom*

Observable behaviours		N	Mean	S.D	Sig.
Boys act as leader in the class	Experimental group	38	2.29	1.183	.421
	Control group	39	2.49	.942	
Only the Class captain/class representative plays lead role in the class	Experimental group	39	2.13	1.196	.143
	Control group	39	2.51	1.097	
Girl students are treated with disrespectful behaviour (Bully, verbal attack, name calling etc.)	Experimental group	39	1.72	1.123	.737
	Control group	38	1.63	1.125	
Teacher asks directive questions to the male students mainly	Experimental group	39	1.62	1.016	.617
	Control group	38	1.74	1.107	
Teacher asks questions to the female students mainly	Experimental group	39	1.64	1.063	.622
	Control group	38	1.76	1.101	
Teacher asks questions to the students irrespective of gender	Experimental group	37	3.51	.837	.661
	Control group	38	3.42	.976	

In the baseline, there was no significant difference in the observations in the experimental and control group in terms of the behavior of boys being a class leader (p-value = 0.421), despite the fact that the control group had a higher mean score of 2.49, opposed to 2.29 being observed in the experimental group. A similar trend was seen in the leader roles of only the class captain, with a higher mean score from control group of 2.51 compared to 2.13 in the experimental group, however the difference was considered insignificant statistically. In terms of disrespectful behaviours that girl students were being treated, there was a lower score from control group of 1.63, compared to 1.72 in the experimental group although this difference was insignificant (p-value = 0.737). The behaviours of teachers asking questions directly to boys and girls also showed insignificant differences, with questions focused on boy students (p-value = 0.617) and girl students (p-value = 0.622). In the baseline, there were not any important differences in the observations of the two groups questions being asked by teachers irrespective of students' genders (p-value = 0.661).

End-line: Control and Experimental Schools Compared

Table 46. *End-line: Control and experimental schools compared in terms of gender and inclusivity in classroom*

		N	Mean	S.D	Sig.
Boys act as leader in the class	Experimental group	40	1.85	.864	.304
	Control group	40	2.08	1.071	
Only the Class captain/class representative plays lead role in the class	Experimental group	40	1.90	.778	.282
	Control group	40	2.10	.871	
Girl students are treated with disrespectful behaviour (Bully, verbal attack, name calling etc.)	Experimental group	40	1.23	.423	.087
	Control group	40	1.43	.594	
Teacher asks directive questions to the male students mainly	Experimental group	40	1.38	.586	.557
	Control group	40	1.45	.552	
Teacher asks questions to the female students mainly	Experimental group	40	1.38	.586	.557
	Control group	40	1.45	.552	
Teacher asks questions to the students irrespective of gender	Experimental group	40	3.58	.903	.242
	Control group	40	3.78	.577	

In the endline, there was no statistically important difference between the experimental group and control group in the observation of the lead role displayed by only the class captain ($p\text{-value} > 0.05$), where the experimental group had a mean score of 1.90, lower than the score of 2.10 in the control group. A similar trend was seen in the observation of lead role taken by boys ($p\text{-value} > 0.05$) with a lower mean score in experimental group (1.85 and 2.08), however, this difference was again considered insignificant. In addition, no statistically important difference between the two groups was seen in terms of questions toward girl students ($p\text{-value} = 0.557 > 0.05$) and boy students ($p\text{-value} = 0.557 > 0.05$), with the mean scores of experimental and control groups being 1.28 and 1.45 in both behaviours. In terms of attacking behaviors towards girls, there was insignificant difference between the two groups ($p\text{-value} > 0.05$) with a lower score of 1.23 of experimental group compared to 1.43 in control group. Regarding the observations of teacher asking questions to the students irrespective of gender, there was also no statistically significant difference ($p\text{-value} > 0.05$) between the two groups.

2.3.6. Communication

Table 47. *Total classroom: baseline and end-line compared in terms of communication*

	Baseline		Endline	
	N	Mean	N	Mean
Teacher talking in class	80	2.91	80	2.59
Students talking in class	80	2.75	80	2.33

In comparing the communication of teachers and students in class, observers were required to rate the frequency of talks in class on a scale of 4 from Rarely to Always. The results showed a decrease in the frequency of talks conveyed by teachers, indicating that in the endline, teachers were giving students more opportunities to express their opinions or to raise their questions in class. Talks from students also witnessed a decrease in means from 2.75 to 2.33, demonstrating a more focus of students on class contents conveyed by teachers in the endline.

Baseline: Control and Experimental Schools Compared

Table 48. *Baseline: Control and experimental schools compared in terms of communication*

Observable behaviours		N	Mean	S.D	Sig.
Teacher talking in class	Experimental group	40	2.93	.764	.892
	Control group	40	2.90	.871	
Students talking in class	Experimental group	40	2.75	.776	1.000
	Control group	40	2.75	.870	

Examining the control and experimental groups in terms of teachers' and students' talking in class, there were no statistical differences in the mean scores of observations between the two groups. Regarding students talking in class, the mean scores of the two groups at baseline were the same (2.75), indicating homogeneity of the two groups at the baseline stage.

End-line: Control and Experimental Schools Compared

Table 49. *End-line: Control and experimental schools compared in terms of communication*

		N	Mean	S.D	Sig.
Teacher talking in class	Experimental group	40	2.48	.816	.232
	Control group	40	2.70	.853	
Students talking in class	Experimental group	40	2.28	.905	.615
	Control group	40	2.38	.868	

There was an insignificant difference between the overall mean score of the classroom observation for experimental and control schools in the end-line in terms of the examination of students talking in class (p -value > 0.05) despite a lower score of 2.28 in the experimental group compared to 2.38 in control group. Similarly, despite a lower mean score of experimental group in teacher's talking in class (2.48

and 2.70), there was no statistically significant difference between the two groups in the end-line.

The results from the teacher interviews and group discussions with students also contribute to consolidating the findings from quantitative data through surveys and classroom observations. Overall, both teachers and students interviewed at the experimental schools are quite satisfied with the positive changes underway. Teachers believe they have enhanced their awareness and teaching skills to pay more attention to the level of integration and fairness among different groups of students. Specifically, teachers pointed out that after being guided by experts on assessment methods and techniques, especially feedback during teaching sessions, they have made more positive changes, such as providing exercises and activities suitable for various skill levels to support students. This way, the class will have more activities tailored to individual needs. Additionally, teachers have increased opportunities for students to express themselves, speak, and engage in activities. One teacher stated, "Now the classroom is centered on students and learning activities, rather than the teacher being the main focus."

The deep group discussions with students also yielded similar results. Specifically, students expressed that they enjoyed the classes and found the activities more positive. One student said, "I feel more involved and expressive, so I also enjoy learning more, and my academic results this year are higher than last year."

Thus, it can be said that the training sessions and intervention activities have significantly impacted the changes in teaching methods of the teachers. However, through survey data, some limitations can also be seen, such as unevenness among teachers, positive teaching activities still not being consistent and unified, teachers still feeling pressured to prepare, time constraints, and tension when teaching these classes. This indicates the need to further support teachers to ensure that skills are mastered and applied more effectively.

2.4. Psychological Sense of School Membership Scale and student academic achievement

2.4.1. Basic Information of Students

The total number of students participating in the baseline survey was 5,589, comprising 2,840 male students, 2,727 female students, and 22 students of other genders. In the experimental schools, there were 2,791 students, while the control schools had 2,798 students.

For the endline survey, the total number of participating students was 4,591. This included 2,537 grade 7 students (55.3%) and 2,054 grade 9 students (44.7%). The gender breakdown was 2,273 male students (49.5%), 2,296 female students (50%), and 22 students of other genders (0.5%).

Table 50. Student information

Total of Grade 7 and Grade 9 students	Baseline		Endline	
	Experimental group	Control group	Experimental group	Control group
	2791	2798	2370	2221

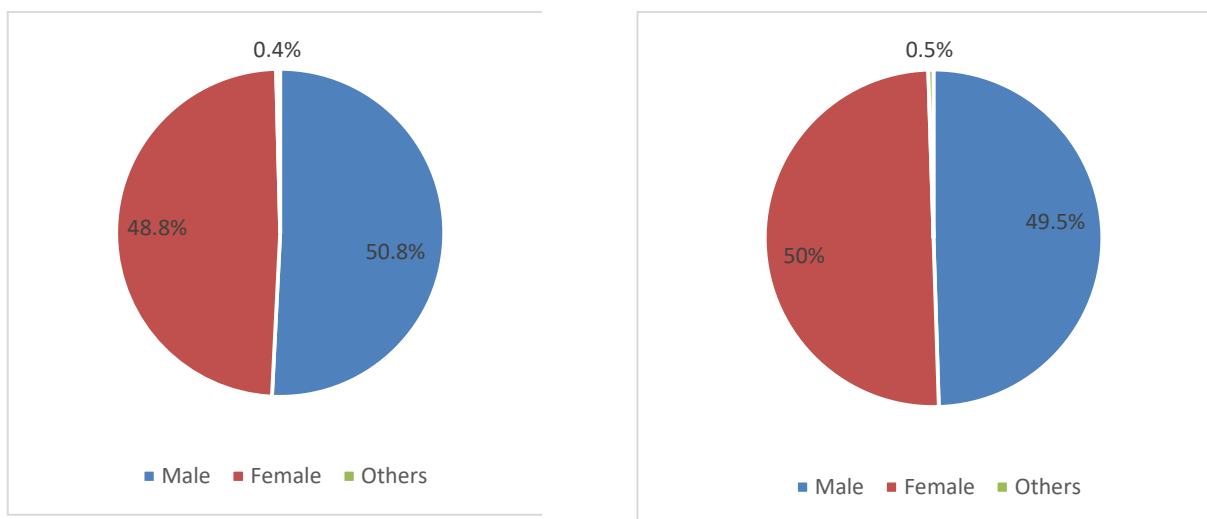


Figure 1. Gender Ratio of Students participating in baseline and endline surveys

The data table and chart above indicate that the number of students participating in the survey before and after the project's implementation in both the experimental and control schools was nearly equal. The gender ratio of male and female students participating in the survey was also nearly equal.

2.4.2. Research results of Psychological Sense of School Membership Scale

The results of the student survey on the Psychological Sense of School Membership Scale during the endline survey were very positive. The questionnaire included 18 items with 5 levels ranging from 1 (Not at all true) to 5 (Completely true). The survey results are presented in the table below.

Table 51. Research results of the Psychological Sense of School Membership Scale

Content	Percentage (%)				
	Not at all true	2	3	True	Completely true
I feel like a part of my school.	3.3%	11.3%	24.2%	43.6%	17.6%
People at my school notice when I am good at something	6.9%	23.3%	32.7%	29.9%	7.3%
It is hard for people like me to be accepted at my school.	40.7%	39.8%	11.4%	6.7%	1.4%
Other students in my school take my opinions seriously.	12.7%	34%	31.5%	17.3%	4.5%
Most teachers at my school are interested in me.	5.4%	20.6%	31.2%	30.6%	12.1%
Sometimes I feel as if I don't belong in my school.	62.2%	26.9%	10.4%	0.4%	0.1%
There is at least one teacher or adult I can talk to in my school if I have a problem	12.1%	13.5%	25%	35.1%	14.2%
People at my school are friendly to me.	2.5%	12%	31.6%	39.3%	14.6%
Teachers here are not interested in people like me.	71.8%	21.9%	5.1%	0.9%	0.3%
I am included in lots of activities at my school.	4.7%	14.3%	32.7%	35.5%	12.9%
I am treated with as much respect as other students at my school.	2.5%	5.8%	20%	47.9%	23.8%
I feel very different from most other students at my school.	31.7%	45.2%	18.6%	3.7%	0.8%
I can really be myself at my school.	6.6%	16.6%	29.1%	35.8%	11.8%
Teachers at my school respect me.	3%	8.5%	25.5%	44.2%	18.8%
People at my school know that I can do good work.	5.9%	22.3%	37.2%	27.4%	7.2%
I wish I were in a different school.	60.7%	37.7%	1.4%	0.2%	0%
I feel proud to belong to my school.	2.9%	6.9%	21.6%	44.5%	24.2%
Other students at my school like me the way that I am.	16.9%	34.5%	29.7%	14.4%	4.4%

Regarding the statement "I feel like a part of my school," the chart below shows that the majority of students (61.2%) agree or strongly agree that they feel like a part of their school. In contrast, only a small percentage (3.3%) of students feel that this statement does not apply to them at all.

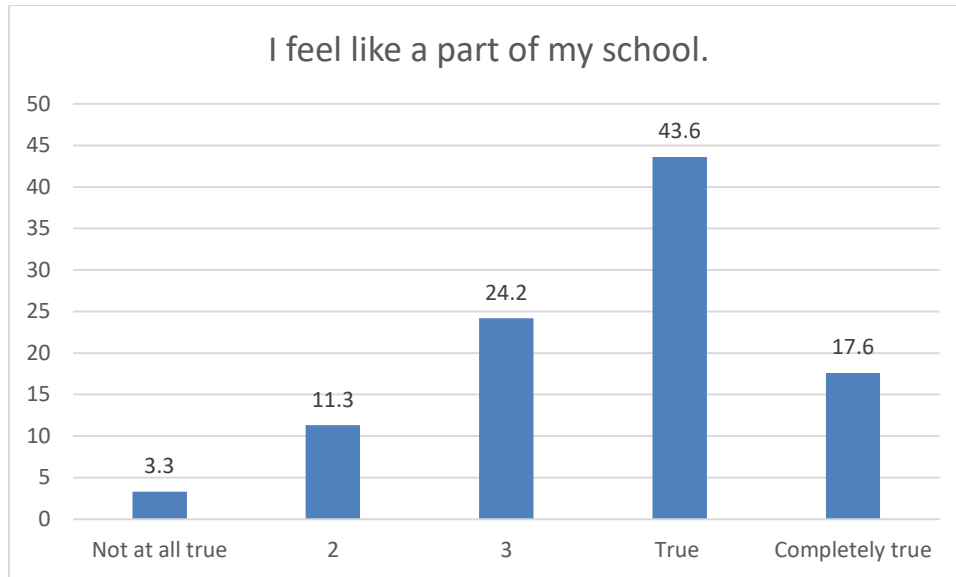


Figure 2. Percentage of Students Responding to the Statement "I feel like a part of my school"

For the three statements: "Sometimes I feel as if I don't belong in my school," "Teachers here are not interested in people like me," and "I wish I were in a different school," the majority of students, over 60%, indicated that these statements are "not at all true." Specifically, 71.8% of students disagreed with "Teachers here are not interested in people like me," suggesting that most students feel cared for by their teachers, which contributes to their strong sense of belonging to the school.

For the four statements: "People at my school are friendly to me," "I am treated with as much respect as other students at my school," "Teachers at my school respect me," and "I feel proud to belong to my school," over 50% of students agreed or strongly agreed. Notably, 71.7% of students felt that "I am treated with as much respect as other students at my school," indicating that most students perceive equal and respectful treatment, fostering a comfortable and inclusive environment for learning and social interaction with teachers and peers.

For the remaining statements, the distribution of student responses was relatively even across the five levels: "Not at all true," "Slightly true," "Somewhat true," "True," and "Completely true."

2.4.3. Differences in Baseline and Endline Survey Results

Table 52. Differences in Mean Values for Each Item in Baseline and Endline Survey Results

No.	Content	Mean	
		Baseline	Endline
1	I feel like a part of my school.	3.53	3.61
2	People at my school notice when I am good at something	2.75	3.07
3	It is hard for people like me to be accepted at my	1.91	1.88

	school.		
4	Other students in my school take my opinions seriously.	2.51	2.67
5	Most teachers at my school are interested in me.	3.12	3.23
6	Sometimes I feel as if I don't belong in my school.	1.56	1.49
7	There is at least one teacher or adult I can talk to in my school if I have a problem	3.11	3.26
8	People at my school are friendly to me.	3.34	3.51
9	Teachers here are not interested in people like me.	1.36	1.36
10	I am included in lots of activities at my school.	2.94	3.38
11	I am treated with as much respect as other students at my school.	3.76	3.85
12	I feel very different from most other students at my school.	1.97	1.97
13	I can really be myself at my school.	3.31	3.3
14	Teachers at my school respect me.	3.6	3.67
15	People at my school know that I can do good work.	2.88	3.08
16	I wish I were in a different school.	1.43	1.41
17	I feel proud to belong to my school.	3.86	3.8
18	Other students at my school like me the way that I am.	2.29	2.55

Based on the data from the mean values of psychological consciousness contents of students when studying at school, obtained before and after the project implementation, it can be observed that out of 18 items, 11 items showed an increase in their mean values compared to before the project was implemented. This indicates a positive change in the psychological consciousness of the students participating in the project. Among these, the item "I am included in lots of activities at my school" showed the highest increase in mean value by 0.44, reflecting an increased positive participation in school activities by the students.

However, there were 5 items: "It is hard for people like me to be accepted at my school," "Sometimes I feel as if I don't belong in my school," and "I wish I were in a different school," where the mean values decreased. This suggests that after participating in the project, the students felt more loved and attached to their school. Meanwhile, the mean values for the 2 items "Teachers here are not interested in people like me" and "I feel very different from most other students at my school" remained unchanged.

2.4.4. Independent Samples Test: Experimental and Control Group in Baseline Surveys

There is a statistically significant difference between students in the experimental school and those in the control school for 8 items related to the psychological consciousness of students at school before participating in the program.

I feel like I am a part of my school. (sig. = 0.000 < 0.05)

Other students at school value my opinions. (sig. = 0.027 < 0.05)

Most teachers at my school care about me. (sig. = 0.019 < 0.05)

There is at least one teacher or adult at my school I can talk to if I have a problem. (sig. = 0.033 < 0.05)

People at my school are very friendly to me. (sig. = 0.000 < 0.05)

I am treated with as much respect as other students at my school. (sig. = 0.000 < 0.05)

Teachers at my school respect me. (sig. = 0.000 < 0.05)

I feel proud to belong to this school. (sig. = 0.000 < 0.05)

Table 53. *Independent Samples Test*

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
I feel like a part of my school.	Equal variances assumed	19.884	.000	5.015	5587	.000	.144	.029	.088	.201
	Equal variances not assumed			5.015	5577.841	.000	.144	.029	.088	.201
People at my school notice when I am good at something	Equal variances assumed	.066	.798	1.262	5587	.207	.039	.031	-.022	.101
	Equal variances not assumed			1.262	5585.012	.207	.039	.031	-.022	.101
It is hard for people like me to be accepted at my school.	Equal variances assumed	.689	.407	-1.442	5587	.149	-.045	.031	-.105	.016
	Equal variances not assumed			-1.442	5586.904	.149	-.045	.031	-.105	.016
Other students in my school	Equal variances assumed	.045	.832	2.205	5587	.027	.067	.031	.007	.127

take my opinions seriously.	Equal variances not assumed			2.205	5586.967	.027	.067	.031	.007	.127
Most teachers at my school are interested in me.	Equal variances assumed	1.175	.278	2.341	5587	.019	.074	.032	.012	.136
	Equal variances not assumed			2.341	5586.421	.019	.074	.032	.012	.136
Sometimes I feel as if I don't belong in my school.	Equal variances assumed	3.736	.053	.374	5587	.709	.010	.026	-.041	.060
	Equal variances not assumed			.374	5576.174	.709	.010	.026	-.041	.060
There is at least one teacher or adult I can talk to in my school if I have a problem	Equal variances assumed	3.482	.062	2.135	5587	.033	.074	.035	.006	.143
	Equal variances not assumed			2.135	5585.401	.033	.074	.035	.006	.143
People at my school are friendly to me.	Equal variances assumed	4.698	.030	4.909	5587	.000	.144	.029	.087	.202
	Equal variances not assumed			4.909	5580.690	.000	.144	.029	.087	.202
Teachers here are not interested in people like me.	Equal variances assumed	7.897	.005	-1.592	5587	.111	-.036	.022	-.079	.008
	Equal variances not assumed			-1.592	5572.430	.111	-.036	.022	-.079	.008
I am included in lots of activities	Equal variances assumed	.073	.787	.671	5587	.502	.021	.031	-.040	.081

s at my school.	Equal variances not assumed			.671	5586.424	.502	.021	.031	-.040	.081
I am treated with as much respect as other students at my school.	Equal variances assumed	67.027	.000	6.896	5587	.000	.188	.027	.135	.241
	Equal variances not assumed			6.897	5537.400	.000	.188	.027	.135	.241
I feel very different from most other students at my school.	Equal variances assumed	.719	.396	.057	5587	.955	.002	.030	-.057	.061
	Equal variances not assumed			.057	5586.245	.955	.002	.030	-.057	.061
I can really be myself at my school.	Equal variances assumed	.008	.929	1.603	5587	.109	.049	.031	-.011	.110
	Equal variances not assumed			1.603	5586.895	.109	.049	.031	-.011	.110
Teachers at my school respect me.	Equal variances assumed	41.846	.000	6.165	5587	.000	.174	.028	.119	.230
	Equal variances not assumed			6.165	5553.882	.000	.174	.028	.119	.230
People at my school know that I can do good work.	Equal variances assumed	2.410	.121	1.762	5587	.078	.053	.030	-.006	.111
	Equal variances not assumed			1.762	5586.873	.078	.053	.030	-.006	.111
I wish I were in a different	Equal variances assumed	.472	.492	-.516	5587	.606	-.013	.024	-.060	.035

school.	Equal variances not assumed			-.516	5586.997	.606	-.013	.024	-.060	.035
I feel proud to belong to my school.	Equal variances assumed	18.161	.000	5.090	5587	.000	.137	.027	.084	.189
	Equal variances not assumed			5.090	5569.592	.000	.137	.027	.084	.189
Other students at my school like me the way that I am.	Equal variances assumed	2.974	.085	1.340	5587	.180	.039	.029	-.018	.097
	Equal variances not assumed			1.339	5584.381	.180	.039	.029	-.018	.097

2.4.5. Independent Samples Test: Experimental and Control Group in Endline Surveys

Analyzing the differences in each content related to the psychological consciousness of students at school according to the type of school after participating in the program yielded the following results:

There is a statistically significant difference between students in the experimental school and those in the control school for 8 items related to the psychological consciousness of students at school after participating in the program (see Table 2.2.3 for details):

It is hard for people like me to be accepted at my school. (sig. = 0.000 < 0.05)

Sometimes I feel as if I don't belong in my school. (sig. = 0.000 < 0.05)

Teachers here are not interested in people like me. (sig. = 0.000 < 0.05)

I am included in lots of activities at my school. (sig. = 0.000 < 0.05)

I am treated with as much respect as other students at my school. (sig. = 0.010 < 0.05)

I feel very different from most other students at my school. (sig. = 0.000 < 0.05)

Teachers at my school respect me. (sig. = 0.012 < 0.05)

People at my school know that I can do good work. (sig. = 0.037 < 0.05)

I wish I were in a different school. (sig. = 0.000 < 0.05)

Table 54. *Independent Samples Test*

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig.	Mean	Std.	95%	

						(2-tailed)	Difference	Error Difference	Confidence Interval of the Difference	
									Lower	Upper
I feel like a part of my school.	Equal variances assumed	.514	.473	1.235	4589	.217	.037	.030	-.022	.095
	Equal variances not assumed			1.236	4580.318	.216	.037	.030	-.022	.095
People at my school notice when I am good at something	Equal variances assumed	1.825	.177	-1.070	4589	.285	-.033	.031	-.094	.027
	Equal variances not assumed			-1.070	4561.215	.285	-.033	.031	-.094	.028
It is hard for people like me to be accepted at my school.	Equal variances assumed	227.993	.000	-11.818	4589	.000	-.327	.028	-.381	-.273
	Equal variances not assumed			-11.667	3803.957	.000	-.327	.028	-.382	-.272
Other students in my school take my opinions seriously.	Equal variances assumed	28.936	.000	1.026	4589	.305	.032	.031	-.029	.092
	Equal variances not assumed			1.023	4482.671	.307	.032	.031	-.029	.092
Most teachers at my school are interested in me.	Equal variances assumed	4.394	.036	-.106	4589	.916	-.003	.032	-.066	.059
	Equal variances not assumed			-.106	4586.213	.916	-.003	.032	-.066	.059
Sometimes I feel as if I don't belong in my school.	Equal variances assumed	334.861	.000	-14.116	4589	.000	-.288	.020	-.328	-.248
	Equal variances not assumed			-13.993	4132.178	.000	-.288	.021	-.328	-.247

There is at least one teacher or adult I can talk to in my school if I have a problem	Equal variance s assumed	5.067	.024	.409	4589	.682	.015	.036	-.056	.085
People at my school are friendly to me.	Equal variance s not assumed			.410	4586.276	.682	.015	.036	-.055	.085
Teachers here are not interested in people like me.	Equal variance s assumed	15.030	.000	1.183	4589	.237	.034	.028	-.022	.090
I am included in lots of activities at my school.	Equal variance s not assumed			1.180	4490.247	.238	.034	.029	-.022	.090
I am treated with as much respect as other students at my school.	Equal variance s assumed	727.277	.000	-14.760	4589	.000	-.278	.019	-.315	-.241
I feel very different from most other students at my school.	Equal variance s not assumed			-14.520	3485.946	.000	-.278	.019	-.315	-.240
I can really be myself at my	Equal variance s assumed	.927	.336	-5.083	4589	.000	-.154	.030	-.213	-.095
	Equal variance s not assumed			-5.089	4584.827	.000	-.154	.030	-.213	-.095
	Equal variance s assumed	.142	.706	2.593	4589	.010	.071	.027	.017	.125
	Equal variance s not assumed			2.595	4580.998	.009	.071	.027	.017	.125
	Equal variance s assumed	264.905	.000	-13.532	4589	.000	-.333	.025	-.382	-.285
	Equal variance s not assumed			-13.386	3967.506	.000	-.333	.025	-.382	-.284
	Equal variance s assumed	2.413	.120	-1.257	4589	.209	-.040	.032	-.103	.023

school.	Equal variance s not assumed			-1.256	4552.104	.209	-.040	.032	-.103	.023
Teachers at my school respect me.	Equal variance s assumed	1.725	.189	2.515	4589	.012	.072	.029	.016	.129
	Equal variance s not assumed			2.514	4563.973	.012	.072	.029	.016	.129
People at my school know that I can do good work.	Equal variance s assumed	7.072	.008	2.087	4589	.037	.062	.030	.004	.120
	Equal variance s not assumed			2.082	4506.262	.037	.062	.030	.004	.121
I wish I were in a different school.	Equal variance s assumed	133.480	.000	-7.655	4588	.000	-.119	.016	-.149	-.088
	Equal variance s not assumed			-7.625	4437.676	.000	-.119	.016	-.149	-.088
I feel proud to belong to my school.	Equal variance s assumed	.052	.820	1.642	4589	.101	.047	.029	-.009	.104
	Equal variance s not assumed			1.642	4572.395	.101	.047	.029	-.009	.104
Other students at my school like me the way that I am.	Equal variance s assumed	12.026	.001	-2.794	4589	.005	-.088	.031	-.150	-.026
	Equal variance s not assumed			-2.789	4514.944	.005	-.088	.032	-.150	-.026

2.4.5. Comparison of Mean Values: Experimental and Control Groups in baseline and endline surveys

Table 55. Comparison of Mean Values: Experimental and Control Groups in baseline and endline surveys

Content	Mean
---------	------

	Experimental group		Control group	
	Baseline	Endline	Baseline	Endline
I feel like a part of my school.	3.6	3.63	3.46	3.59
People at my school notice when I am good at something	2.77	3.06	2.73	3.09
It is hard for people like me to be accepted at my school.	1.88	1.72	1.93	2.05
Other students in my school take my opinions seriously.	2.54	2.68	2.48	2.65
Most teachers at my school are interested in me.	3.16	3.23	3.09	3.23
Sometimes I feel as if I don't belong in my school.	1.56	1.35	1.55	1.64
There is at least one teacher or adult I can talk to in my school if I have a problem	3.14	3.26	3.07	3.25
People at my school are friendly to me.	3.41	3.53	3.27	3.5
Teachers here are not interested in people like me.	1.34	1.23	1.37	1.5
I am included in lots of activities at my school.	2.95	3.3	2.93	3.46
I am treated with as much respect as other students at my school.	3.85	3.88	3.66	3.81
I feel very different from most other students at my school.	1.97	1.81	1.97	2.14
I can really be myself at my school.	3.33	3.28	3.28	3.32
Teachers at my school respect me.	3.69	3.71	3.52	3.64
People at my school know that I can do good work.	2.91	3.11	2.85	3.05
I wish I were in a different school.	1.43	1.35	1.44	1.47
I feel proud to belong to my school.	3.93	3.83	3.79	3.78
Other students at my school like me the way that I am.	2.31	2.51	2.27	2.59

Based on the above data, there was a statistically significant difference between students in the experimental school and those in the control school for 8 items before the project was implemented:

- "I feel like a part of my school."
- "Other students in my school take my opinions seriously."
- "Most teachers at my school are interested in me."
- "There is at least one teacher or adult I can talk to in my school if I have a problem."
- "People at my school are friendly to me."
- "I am treated with as much respect as other students at my school."
- "Teachers at my school respect me."
- "I feel proud to belong to my school."

After the project was implemented, there was a statistically significant difference between students in the experimental school and those in the control school for 9 items:

- “It is hard for people like me to be accepted at my school.”
- “Sometimes I feel as if I don’t belong in my school.”
- “Teachers here are not interested in people like me.”
- “I feel very different from most other students at my school.”
- “I wish I were in a different school.”
- “I am included in lots of activities at my school.”
- “I am treated with as much respect as other students at my school.”
- “Teachers at my school respect me.”
- “People at my school know that I can do good work.”

However, among the 9 items after the project was implemented, 7 items were different from the initial ones:

- “It is hard for people like me to be accepted at my school.”
- “Sometimes I feel as if I don’t belong in my school.”
- “Teachers here are not interested in people like me.”
- “I feel very different from most other students at my school.”
- “I wish I were in a different school.”
- “I am included in lots of activities at my school.”
- “People at my school know that I can do good work.”

For these 7 items, the mean values for the experimental group were lower than those for the control group for 5 items, indicating negative content:

- “It is hard for people like me to be accepted at my school.”
- “Sometimes I feel as if I don’t belong in my school.”
- “Teachers here are not interested in people like me.”
- “I feel very different from most other students at my school.”
- “I wish I were in a different school.”

Meanwhile, for the 2 positive items, the mean values for the experimental group were higher than those for the control group:

- “I am included in lots of activities at my school.”
- “People at my school know that I can do good work.”

This suggests that after participating in the project, students in the experimental group experienced positive changes in their awareness and psychological consciousness compared to students in the control group. From the data in the Table, it can be seen that for the experimental schools, after participating in the project “Applying Teaching Methods to Promote Gender Equality and Inclusive Education for Students During and After the Pandemic,” students’ perceptions of their school experience improved compared to students in the control schools. The students who participated in the project were better able to integrate into different school environments.

Analyzing the interview data also yields positive results, consistent with the findings

from the survey. Specifically, the in-depth interviews with students provide us with a deeper insight into the effectiveness of interventions regarding teacher training, guidance, and workshops on inclusive gender-equitable teaching methods and integration. Students, especially those with special needs, express feeling more included and cared for, as they perceive themselves as part of the classroom. For instance, a 9th-grade student in Ha Long shared, "Even though I'm not very academically strong, teachers always give me opportunities to answer questions in class and pay attention to my responses."

When asked about what they find best in the school, a 7th-grade student said, "I like being at school because everyone respects each other, and if anyone is bullied, I can share it with the teachers." Regarding classroom activities, students mentioned having more opportunities to express their opinions, engaging in positive learning activities organized by teachers, incorporating technology, and allowing more student participation. A 7th-grade student in Vinh Phuc responded, "I find classes more enjoyable; the teacher lets us play games. We're divided into groups, and the stronger students help the weaker ones; we help each other progress in learning."

A student from an ethnic minority in Vinh Phuc shared, "I am an ethnic minority student, but I also receive attention from teachers; I find learning easier." Regarding gender fairness, no student complained about unfair treatment based on gender in the classroom. All students agree that teachers treat male and female students equally and fairly, providing equal opportunities for everyone.

Most interviewed students believe that classes are much more enjoyable, and they feel more sociable, close-knit, and friendly with activities within the classroom. However, some students expressed a desire for further enhancement of activities to attract more participation. A 9th-grade student shared, "Sometimes teachers still tend to call upon the better-performing students; I hope opinions of students who aren't academically strong are also recognized." Or, "Difficult questions are often deferred to the better-performing students," said a 9th-grade student in Vinh Phuc.

Thus, it is evident that despite many improvements and positive changes following interventions, there are still phenomena of incomplete integration that need to be addressed. Therefore, it is necessary to continue supporting teachers and schools in implementing and evaluating inclusive and gender-equitable teaching methods to give a better, more inclusive and friendly learning environment for students.

2.4.6. Student academic achievement

One of the crucial data sets of the project is the collection of students' academic data. To gather this data, we conducted data collection for 7th and 9th-grade students in both experimental and control schools in two provinces, Quang Ninh and Vinh Phuc. The assessment results were gathered in two main directions: 1. Formative in-class assessments and 2. End-of-term assessments. Additionally, end-of-year assessment results were collected through year-end exams. The assessment results indicate certain changes between the input and output after the intervention of the experimental school group. The results are displayed in the below table.

Table 56. *Data of Student academic achievement*

Variables	Group	Baseline		Endline		Sig. (Difference) In baseline and end line
		N	Composite Mean (Scores)	N	Composite Mean (Scores)	
Total	Control	2798	6,84	2221	6,84	0,000
	Experimental	2791	6,90	2370	7,13	0,000
Boy	Control	1459	6,79	1106	6,72	0,062
	Experimental	1381	6,72	1167	7,15	0,010
Girls	Control	1336	6,9	1100	6,97	0,012
	Experimental	1391	7	1196	7,21	0,000
Others	Control	3	6,83	15	6,84	0,000
	Experimental	19	6,97	7	7,03	0,037

In details, the academic achievement data from the baseline to endline research period is detailed below, providing insights into the changes observed within each group: Control Group: At baseline, there were 2798 students with a composite mean score of 6.84, which remained consistent at the endline with 2221 students maintaining the same composite mean score. The difference between baseline and endline scores was not statistically significant (Sig. = 0.000). Experimental Group: Initial data indicated 2791 students with a composite mean score of 6.90, which notably increased to 2370 students achieving a composite mean score of 7.13 at the endline. The improvement was statistically significant (Sig. = 0.000).

Boys: Control Group: Initially, 1459 boys had a composite mean score of 6.79, which slightly decreased to 1106 boys with a composite mean score of 6.72 at the endline. Although there was a decrease, the difference was not statistically significant (Sig. = 0.062). Experimental Group: In the experimental group, there were 1381 boys with a baseline composite mean score of 6.72, which increased significantly to 1167 boys achieving a composite mean score of 7.15 at the endline (Sig. = 0.010).

Girls: Control Group: The baseline data for girls in the control group consisted of 1336 students with a composite mean score of 6.90, which slightly increased to 1100 students achieving a composite mean score of 6.97 at the endline. The difference was statistically significant (Sig. = 0.012). Experimental Group: In contrast, the experimental group's baseline data comprised 1391 girls with a composite mean score of 7.00, which notably increased to 1196 girls achieving a composite mean score of 7.21 at the endline. The improvement was statistically significant (Sig. = 0.000).

Other genders: Control Group: There were only three students categorized under 'Others' at baseline, with a composite mean score of 6.83. By the endline, this group increased

to 15 students with a slightly higher composite mean score of 6.84. The difference was not statistically significant (Sig. = 0.000). Experimental Group: In the experimental group, 19 students were classified under 'Others' at baseline, achieving a composite mean score of 6.97, which increased to seven students with a composite mean score of 7.03 at the endline. The difference was statistically significant (Sig. = 0.037). These detailed findings illustrate the nuanced changes in academic achievement within each group and subcategory, highlighting the effectiveness of interventions in improving student performance, particularly in the experimental group.

Regarding students' grades based on gender, the table above indicates that in Vietnam, females tend to have higher scores than males, both in the initial academic performance and the final academic outcomes. Between the initial and final results, male students' academic performance shows a slight improvement compared to their initial performance. This partly demonstrates the effectiveness of students' learning with the support provided through training, which includes changes in teaching methods and assessment for teachers in promoting an inclusive and equitable environment for students.

3. Conclusion, Challenges and Recommendation

3.1. Conclusion

This research has thoroughly investigated the impact of Gender and Inclusive Pedagogical (GIP) approaches on the participation and learning achievements of students in grades VII and IX in Vietnam. The study aimed to measure how GIP interventions affected teachers' attitudes, efficacy, and practices, while also assessing their impact on student participation and learning achievements. Additionally, the research sought to identify potential differences in impact based on gender and other backgrounds, and to determine sustainability mechanisms for GIP approaches in Vietnam and other countries.

The findings indicate positive changes in teachers' attitudes, efficacy, and teaching practices following the implementation of GIP approaches. Notably, there were significant improvements in student participation and learning outcomes, underscoring the benefits of targeted teacher training in inclusive pedagogy and assessment. The results showed promising trends in technology integration and the adoption of inclusive teaching methods, suggesting pathways for future educational development. However, notable differences in some areas imply that GIP interventions may need further refinement for better impacts.

The positive changes observed in teachers' attitudes and practices, along with improved student outcomes, align with the research objectives, confirming the potential impact of GIP approaches on schools, teachers, and students. The study calls for sustained efforts to address challenges, enhance interventions, and explore sustainable mechanisms in Vietnam and other countries. Recommendations emphasize ongoing teacher professional development and further collaboration, and support to foster a sustainable learning environment. The study concludes on an optimistic note, highlighting the potential benefits of refining interventions to create an inclusive learning environment.

3.2. Challenges and Limitations

This research was conducted over two years with four intervention phases. Project staff supported teachers in implementing gender-equal and inclusive teaching methods, supplemented by regular assistance beyond the main training sessions. However, there were

limitations related to sample quality. The experimental and control schools were selected using a focused sampling method, resulting in relatively subjective indicators. Additionally, project implementation faced challenges due to the overwhelming workload of teachers and schools, which sometimes hindered their focus on the project.

The project initially selected five teachers per experimental school and two teachers from district and provincial education departments for training. However, some female teachers took maternity leave and other teachers had to be replaced due to other commitments, leading to changes in the participating teacher cohort. To maintain project quality, new teachers received training on previously covered content to catch up.

Differences in teachers' skill levels and experience also impacted project effectiveness. Teachers with varying levels of expertise showed different rates of improvement after each training session, affecting the project's overall outcomes. Ensuring uniform quality among teachers was challenging due to their diverse starting points.

Moreover, core teachers who received training also trained other teachers in their schools, disseminating inclusive methods and assessment practices. These teachers received materials and support from the project, and they were included in surveys, dividing the experimental school teachers into two groups for comparison: those who directly received training and those who did not.

Surveys conducted online for both teachers and students posed additional challenges, as some participants faced difficulties accessing the online platform. Despite efforts to clean the data, this affected its quality.

3.3. Recommendations

The study recommends continuing to emphasize teacher professional development, encouraging collaborative efforts among teachers to share best practices, and providing institutional support for the implementation of inclusive pedagogical approaches. More programs and projects should be developed to support schools, teachers, and students in practicing gender-inclusive pedagogy and assessment. Additionally, conducting a longitudinal study is recommended to observe the sustained effects of GIP practices over time, as this project spanned only two years, to better evaluate GIP effectiveness in schools.