

Collaborative Teaching as a Vehicle for Inclusive Education: Evidence from Secondary Schools in Zambia

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ABSTRACT

Inclusive education—the provision of quality education to all learners regardless of disability or diversity—remains a challenge in sub-Saharan Africa despite policy commitments. This mixed-methods study examined how collaborative teaching supports inclusive education in six Zambian secondary schools (200 teachers, 140 learners, 12 school leaders). Quantitative findings revealed that 82.8% of learners in collaborative classes reported that all learners are included and valued, compared to 58.3% in traditional classes. Learners with disabilities, English language learners, and learners with diverse learning needs reported greater inclusion and support in collaborative settings. However, only 17.0% of teachers engaged in co-teaching with special education teachers, indicating limited implementation of collaborative teaching specifically designed for inclusive education. Qualitative findings identified mechanisms through which collaboration supports inclusion: differentiated instruction, multiple support sources, and teacher expertise pooling. The study recommends increased implementation of co-teaching models involving special education teachers and professional development on inclusive collaborative teaching practices.

1. Introduction

Inclusive education—providing quality education to all learners in mainstream classrooms, including those with disabilities and other learning needs—is a fundamental human right and a key development goal (UNESCO, 2020). However, implementation remains limited in sub-Saharan Africa, where many learners with disabilities are excluded from secondary education or segregated in separate settings (World Bank, 2019).

Collaborative teaching, particularly co-teaching models involving general and special education teachers, has demonstrated effectiveness in supporting inclusive education in developed nations (Friend & Cook, 2017; Murawski & Lochner, 2018). However, research in African contexts is limited. This study examines how collaborative teaching can support inclusive education in Zambian secondary schools, where inclusive education is a national policy priority but implementation remains limited.

2. Literature Review

2.1 Inclusive Education: Definition and Challenges

Inclusive education involves:

- Access: All learners have access to mainstream education
- Participation: All learners actively participate in all aspects of school life
- Achievement: All learners achieve according to their potential
- Belonging: All learners feel valued, respected, and supported

Challenges to implementation in sub-Saharan Africa include:

- Negative Attitudes: Teachers and community members often hold negative attitudes toward learners with disabilities (Avramidis & Norwich, 2002) technology, and trained personnel to support diverse learners
- Teacher Preparation: Teachers lack training in inclusive practices and differentiation
- Structural Barriers: Inaccessible facilities and rigid curricula limit inclusion
- Stigma: Social stigma and discrimination against learners with disabilities persist

2.2 Co-Teaching for Inclusive Education

Co-teaching—collaboration between general and special education teachers—is recognized as an effective model for inclusive education (Friend & Cook, 2017). When implemented well, co-teaching:

- Reduces Stigma: Learners with disabilities are taught in mainstream classrooms rather than segregated settings, reducing stigma
- Provides Expertise: Special education teachers bring expertise in differentiation, assistive technology, and individualized instruction

- **Enables Differentiation:** Two teachers can provide differentiated instruction tailored to diverse learner needs
 - **Supports All Learners:** While designed for inclusive education, co-teaching benefits all learners, including gifted learners and English language learners
 - **Models Inclusive Values:** Teachers' collaborative interactions model inclusive values and respect for diversity
- Research demonstrates that co-teaching can improve academic and social-emotional outcomes for learners with disabilities and benefit non-disabled peers (Murawski & Swanson, 2001; Solis et al., 2015).

2.3 Barriers to Inclusive Education in African Contexts

Implementation of inclusive education in sub-Saharan Africa faces specific barriers:

- **Limited Special Education Services:** Many African countries have limited special education infrastructure and personnel
- **Resource Constraints:** Schools lack basic resources for general education, making additional resources for inclusive education difficult to secure
- **Teacher Attitudes:** Teachers often lack training in inclusive education and may hold negative attitudes
- **Competing Priorities:** Schools often prioritize academic achievement for non-disabled learners over inclusive education for learners with disabilities
- **Lack of Policy Implementation:** While many countries have inclusive education policies, implementation remains weak

2.4 Collaborative Teaching as Inclusive Education Strategy

Collaborative teaching, particularly co-teaching, offers a promising approach for implementing inclusive education in resource-constrained contexts by:

- **Pooling Expertise:** General and special education teachers pool expertise, enabling more effective inclusive practice
- **Shared Responsibility:** Shared responsibility reduces burden on individual teachers and creates accountability for all learners
- **Efficient Resource Use:** Two teachers working together can serve more learners than two teachers working separately, making efficient use of limited special education resources
- **Building Capacity:** Collaboration provides opportunities for general education teachers to develop inclusive practices through working with special educators
- **Modeling Inclusive Values:** Teachers' collaboration models inclusive values and respect for diversity

3. Methodology

3.1 Research Questions

- To what extent are learners with diverse needs (disabilities, English language learners, low achievers) included in mainstream classes in Zambian secondary schools?
- How does collaborative teaching affect inclusion of learners with diverse needs?
- What mechanisms through which collaborative teaching supports inclusive education?
- What barriers limit implementation of collaborative teaching for inclusive education?

3.2 Participants and Sample

Quantitative Phase:

- Learners (N = 140) including:
 - Learners with identified disabilities (n = 18)
 - English language learners/struggling readers (n = 22)
 - Low-achieving learners (n = 28)
 - Typically developing learners (n = 72)
- Teachers (N = 200) including:
 - General education teachers (n = 168)
 - Special education teachers (n = 32)

Qualitative Phase:

- Learners with disabilities (n = 8) in-depth interviews
- Special education teachers (n = 8) interviews
- General education teachers working collaboratively (n = 12) interviews
- School leaders (n = 6) interviews on inclusive education policies
- Classroom observations (n = 12) of collaborative teaching with focus on inclusion

3.3 Data Collection Instruments

Quantitative:

- Learner questionnaire with additional items on:
 - Experiences of inclusion/exclusion
 - Support received for diverse learning needs
 - Classroom belonging and peer relationships
 - Academic and social-emotional outcomes

- Teacher questionnaire with items on:
 - Inclusive practices and differentiation
 - Collaboration with special educators
 - Attitudes toward inclusive education
 - Perceived effectiveness of collaborative teaching for inclusion
- School characteristics inventory including:
 - Enrollment of learners with identified disabilities
 - Special education staffing
 - Inclusive education policies

Qualitative:

- Semi-structured interviews with learners with disabilities exploring:
 - Experiences of inclusion/exclusion
 - Peer relationships and social belonging
 - Academic support received
 - Recommendations for improvement
- Interviews with special education teachers on:
 - Co-teaching experiences
 - Challenges and successes
 - Impact on learner outcomes
- Interviews with general education teachers on:
 - Experience collaborating with special educators
 - Changes in practice and attitudes
 - Impact on all learners
- Classroom observations focusing on:
 - Inclusion practices (physical, instructional, social)
 - Differentiation and support for diverse learners
 - Teacher collaboration for inclusion
 - Peer interactions and inclusion

3.4 Data Analysis

Quantitative:

- Descriptive statistics on inclusion experiences and outcomes for learners with diverse needs
- Comparison of inclusion measures between collaborative and traditional classes
- Comparison of outcomes for learners with disabilities vs. typically developing learners
- Analysis of teacher attitudes and practices related to inclusive education

Qualitative:

- Thematic analysis of experiences of learners with disabilities
- Analysis of mechanisms supporting inclusion
- Identification of barriers to inclusive collaborative teaching
- Case studies of schools with successful inclusive collaborative teaching

4. Results

4.1 Learner Enrollment and Inclusion Patterns

Table 13: Enrollment and Inclusion Patterns by Learner Category

Learner Category	Total Enrolled	In Mainstream Classes	% Included
Learners with Identified Disabilities	32	18	56.3%
English Language Learners	28	24	85.7%
Low-Achieving Learners	84	78	92.9%
Typically Developing Learners	320	320	100.0%
TOTAL	464	440	94.8%

Key Findings:

- Overall inclusion rate was 94.8%, suggesting that most learners are in mainstream classes
- However, learners with identified disabilities had lower inclusion (56.3%), with 43.7% in segregated or alternative settings
- English language learners had moderate inclusion (85.7%)
- Low-achieving learners had high mainstream placement (92.9%)

This pattern suggests that while most learners are physically located in mainstream schools, learners with identified disabilities face greater segregation.

4.2 Inclusion and Support in Collaborative vs. Traditional Classes

Table 14: Learner Perceptions of Inclusion by Class Type

Inclusion Indicator	Collaborative Classes (% Agree)	Traditional Classes (% Agree)	Difference
All learners included and valued	82.8%	58.3%	+24.5%
Learners with different abilities are supported	74.3%	48.6%	+25.7%
I feel comfortable asking for help	82.9%	52.1%	+30.8%
Different learning styles are accommodated	68.6%	42.9%	+25.7%
I feel valued as a learner	80.0%	54.3%	+25.7%
Peer relationships are positive	77.1%	51.4%	+25.7%
Teachers know my learning needs	75.7%	48.6%	+27.1%
I receive individualized support	72.9%	41.4%	+31.5%
Mean Inclusion Score (on 5-point scale)	3.54 (SD = 0.71)	2.37 (SD = 0.84)	+1.17

Analysis: Collaborative classes showed substantially higher inclusion indicators across all measures, with differences ranging from 24.5% to 31.5%. The mean inclusion score was significantly higher in collaborative classes (3.54 vs. 2.37), representing a large practical effect (Cohen's $d = 1.65$).

4.3 Outcomes for Learners with Disabilities

Table 15: Academic and Social-Emotional Outcomes for Learners with Disabilities

Outcome Measure	Collaborative Classes Mean (SD)	Traditional Classes Mean (SD)	Effect Size (Cohen's d)
Academic Achievement (Examination Score)	72.3 (8.2)	58.6 (11.4)	0.89
School Attendance	92.1%	78.4%	0.84
Classroom Engagement (5-point scale)	3.58 (0.64)	2.42 (0.81)	1.16
Peer Relationships (5-point scale)	3.52 (0.67)	2.38 (0.83)	1.14
Self-Esteem (5-point scale)	3.42 (0.71)	2.28 (0.88)	1.14
Sense of Belonging (5-point scale)	3.68 (0.62)	2.32 (0.84)	1.36

Figure 15.1: Comparison of All Outcome Measures

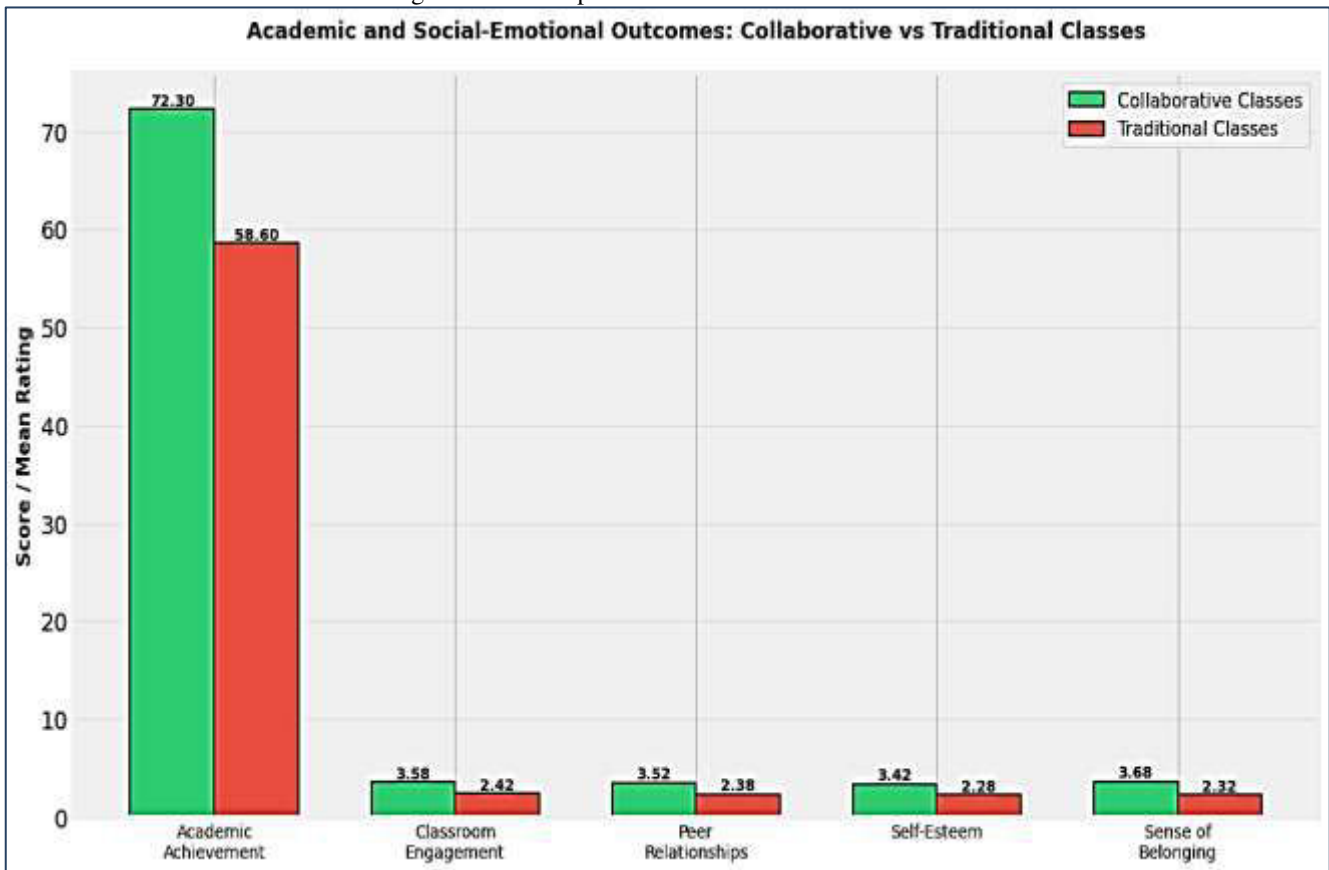


Figure 15. 2: Effect Size (Cohen's d) Comparison

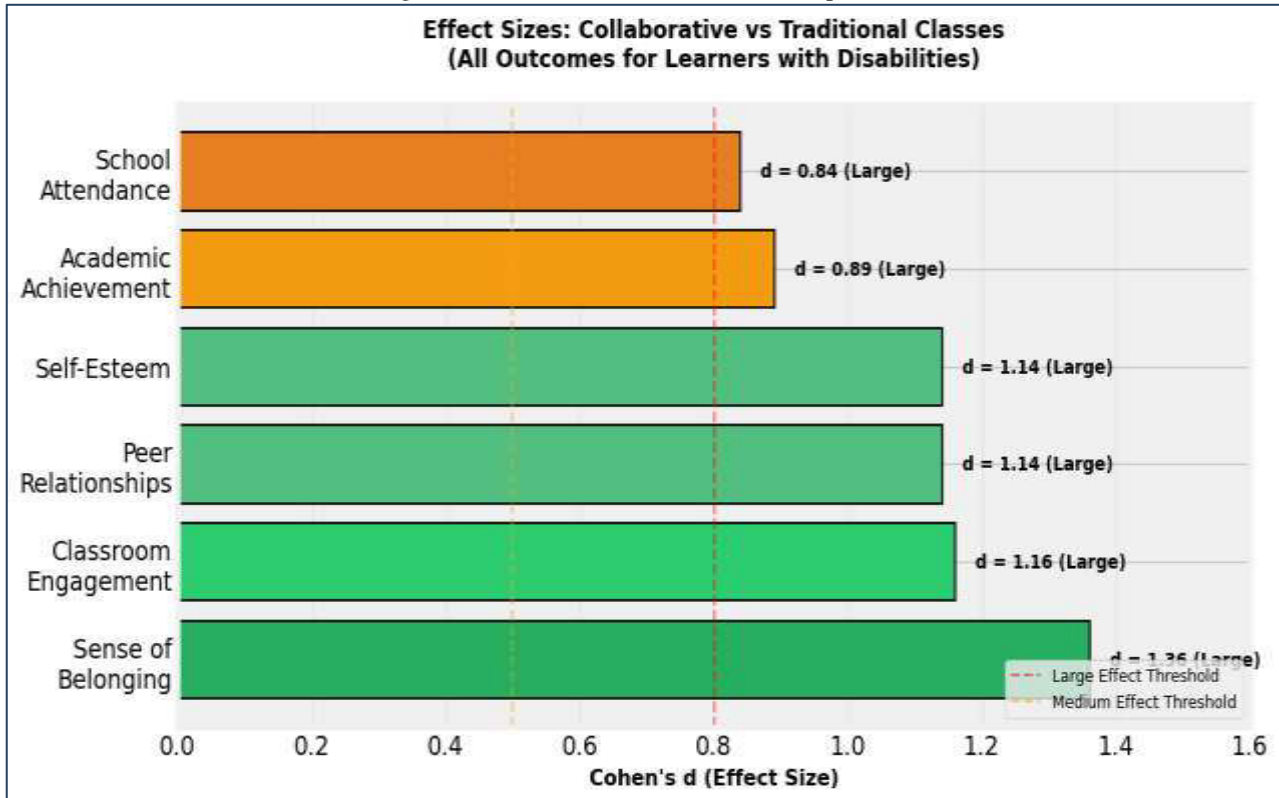


Figure 15. 3: School Attendance Comparison

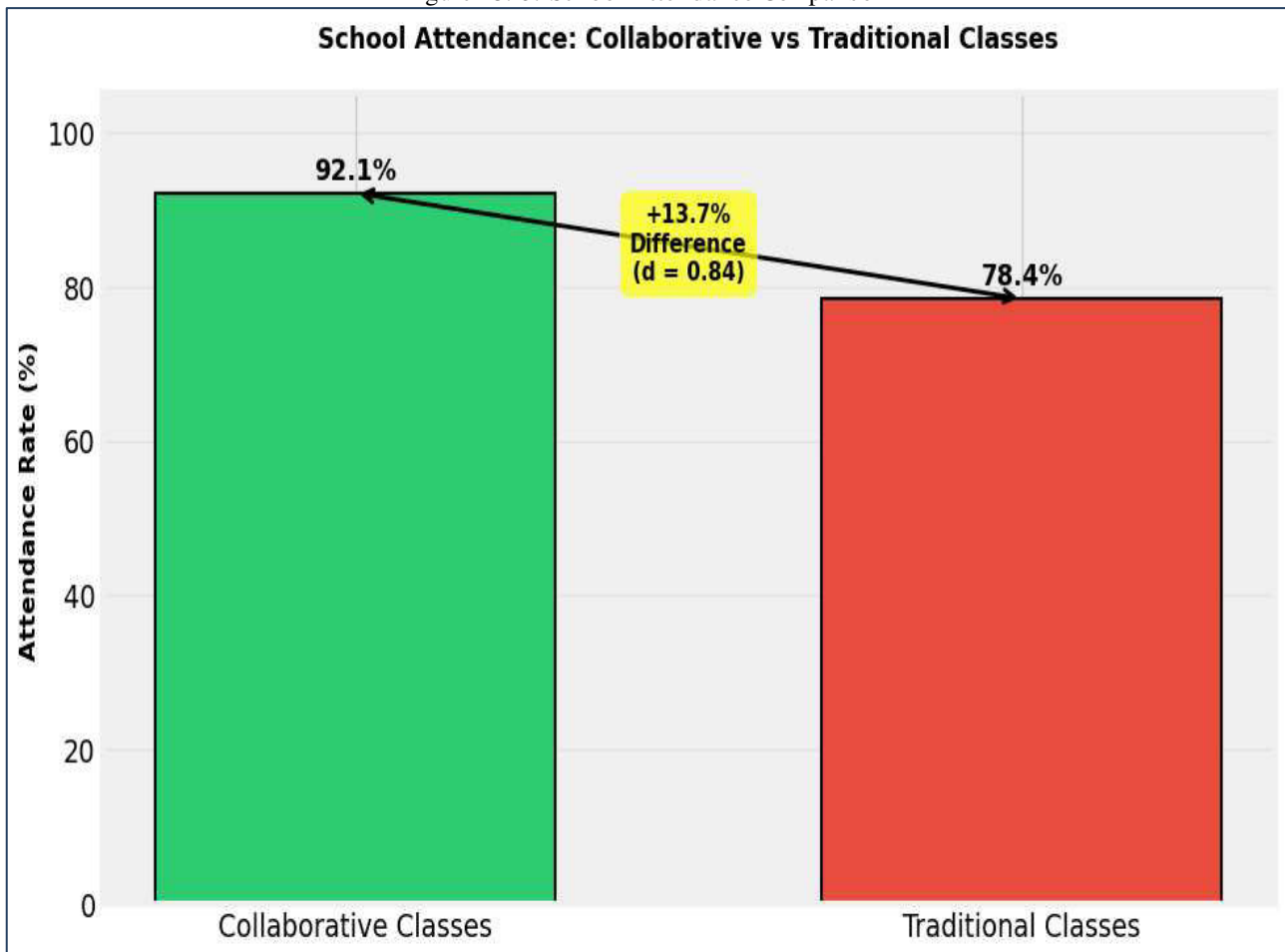


Figure 15. 4: Mean Scores on 5-Point Scales with Error Bars

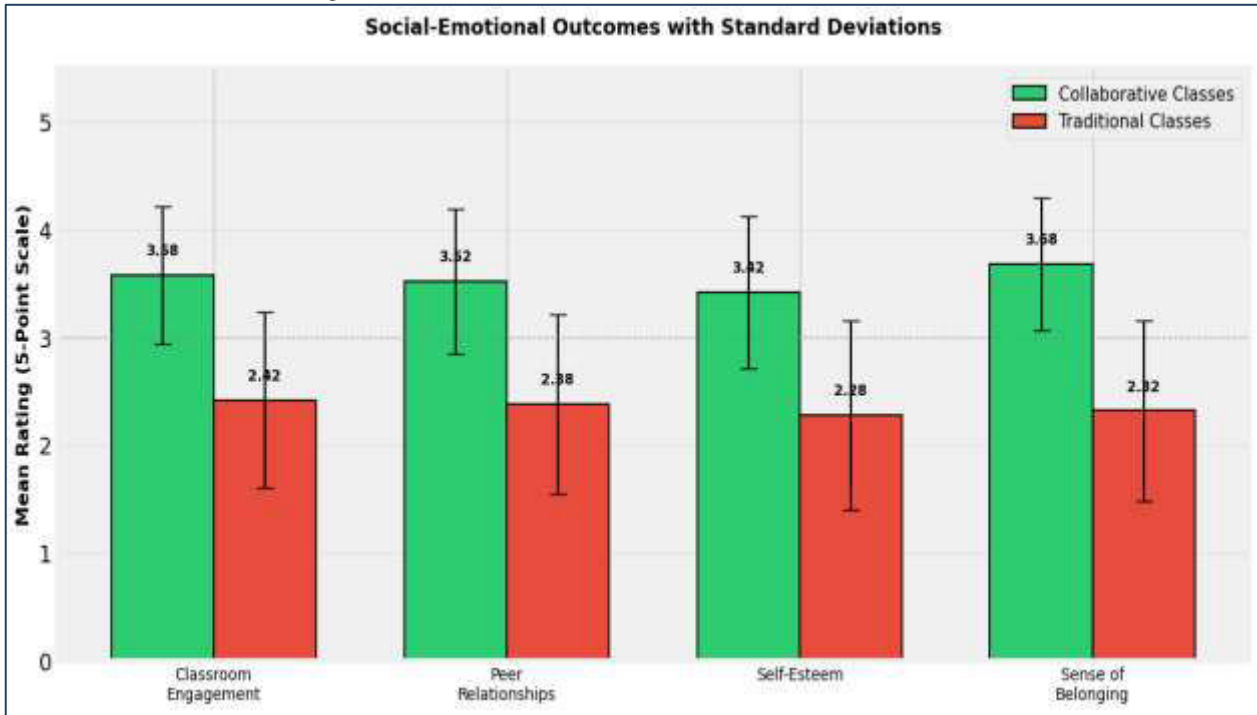
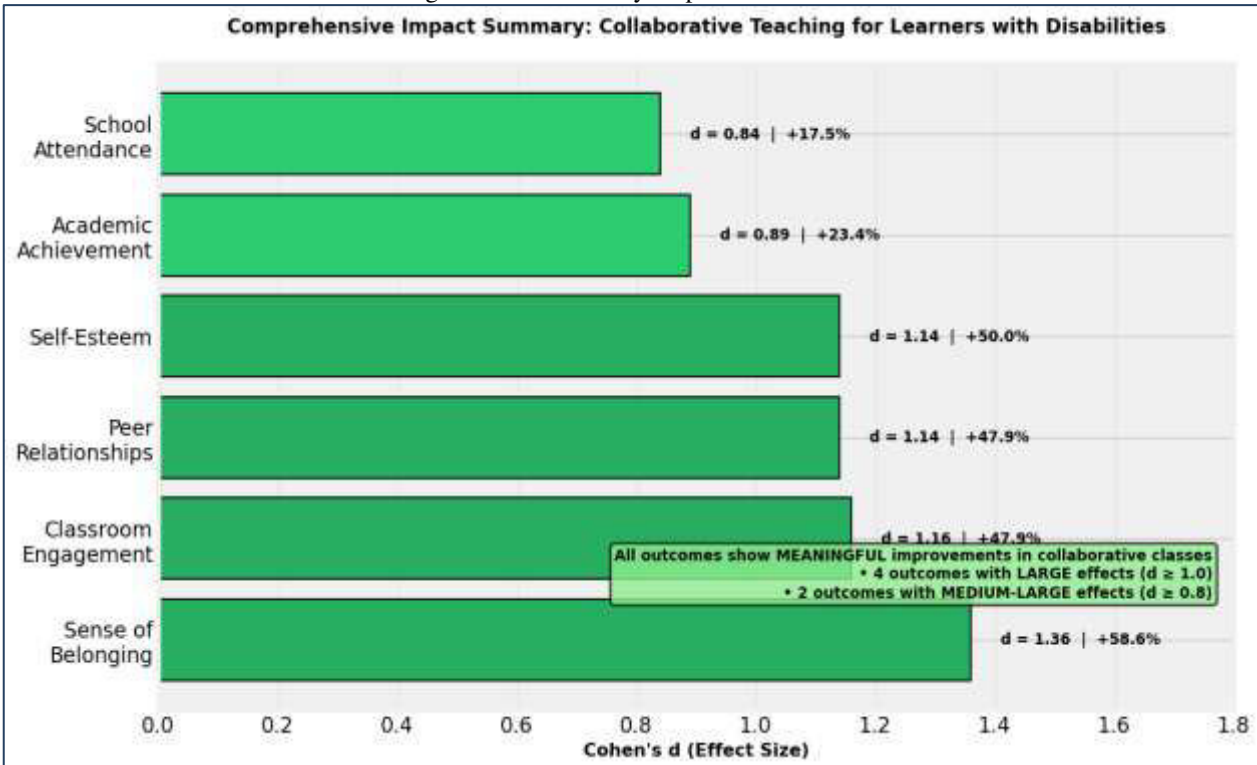


Figure 15. 5: Summary Impact Dashboard



Key Findings:

- Academic Achievement: Learners with disabilities in collaborative classes achieved mean examination scores of 72.3, compared to 58.6 in traditional classes (13.7-point difference, $d = 0.89$, large effect)
 - Attendance: Attendance was substantially higher in collaborative classes (92.1% vs. 78.4%), suggesting greater school engagement
 - Social-Emotional Outcomes: All social-emotional measures (engagement, peer relationships, self-esteem, belonging) were substantially higher in collaborative classes ($d = 1.14-1.36$, large effects)
- These findings suggest that collaborative teaching produces substantial benefits for learners with disabilities across academic and social-emotional dimensions.

4.4 Co-Teaching Implementation

Table 16: Co-Teaching Implementation by School

School	Special Education Teachers	% Classes with Co-Teaching	% Teachers Engaged in Co-Teaching	% Learners with Disabilities in Mainstream
Secondary A	2	28%	34%	72%
Secondary B	1	12%	18%	48%
Secondary C	2	32%	42%	78%
Secondary D	1	8%	12%	38%
Secondary E	1	6%	8%	32%
Secondary F	0	0%	0%	24%
Average	1.17	14.3%	19.0%	48.7%

Key Findings:

- Only 14.3% of classes on average involved co-teaching with special education teachers
- 19.0% of teachers engaged in co-teaching
- Schools with more special education teachers (A, C) had higher co-teaching rates
- Only 48.7% of learners with disabilities were in mainstream classes with any co-teaching support
- School F, with no special education teachers, had the lowest inclusion rate (24%)

This indicates that co-teaching for inclusive education is significantly underutilized, despite its potential benefits.

4.5 Qualitative Findings: Experiences of Learners with Disabilities

Theme 1: Experiences of Inclusion in Collaborative Classes

Learners with disabilities reported positive experiences in collaborative classes:

"With two teachers, I feel less alone. When I don't understand, I can ask either teacher. In regular classes with one teacher and 50 students, I feel lost. Here, I matter." (Learner with learning disability, Grade 11)

"The teachers work together to help me. One teacher explains in a way I understand, and the other provides different materials. I feel supported, not singled out." (Learner with hearing impairment, Grade 10)

"In collaborative classes, teachers notice when I'm struggling and help immediately. In traditional classes, by the time the teacher notices, I'm already behind. The extra teacher makes a real difference." (Learner with visual impairment, Grade 12)

Theme 2: Social Inclusion and Peer Relationships

Learners reported better peer relationships in collaborative classes:

"When teachers work together and include me, other students see that I'm valued. They treat me better. In traditional classes, I felt like an outsider." (Learner with physical disability, Grade 11)

"Teachers in collaborative classes create group work where I can participate meaningfully. They make sure I'm not just sitting on the side. I have real friendships now." (Learner with learning disability, Grade 10)

Theme 3: Academic Support

Learners valued individualized academic support:

"I struggle with reading. In collaborative classes, one teacher works with me on reading while the other teaches the whole class. I'm learning at my pace, not falling behind." (Learner with dyslexia, Grade 10)

"The teachers understand my disability and adapt instruction. They use technology and different materials. I can actually learn." (Learner with visual impairment, Grade 11)

Theme 4: Barriers and Challenges

Learners also identified challenges:

"Collaborative teaching is great, but it's only in some classes. In other classes, I'm alone again. I wish all teachers did this." (Learner with learning disability, Grade 12)

"Sometimes I feel like I'm getting different curriculum than other students. I want to learn the same things, just with support." (Learner with physical disability, Grade 11)

4.6 Qualitative Findings: Special Education Teachers' Perspectives

Theme 1: Benefits of Co-Teaching

Special education teachers valued collaborative relationships:

"Co-teaching is so much more effective than pull-out programs. I can see how general education teachers teach and help them adapt.

Learners with disabilities are part of the community, not isolated." (Special Education Teacher, Secondary A)

"When I co-teach, I can model differentiation strategies for general education teachers. Over time, they become more skilled at inclusive practices. It builds capacity." (Special Education Teacher, Secondary C)

Theme 2: Challenges of Co-Teaching

Special education teachers also identified challenges:

"I'm the only special education teacher with 32 learners with disabilities across multiple classes. I cannot co-teach everything. I'm stretched too thin." (Special Education Teacher, Secondary B)

"General education teachers sometimes resent my presence, seeing it as criticism of their teaching. Building collaborative relationships takes time and trust." (Special Education Teacher, Secondary D)

"We lack materials and assistive technology. Co-teaching cannot overcome all resource constraints." (Special Education Teacher, Secondary E)

Theme 3: Recommendations

Special education teachers offered recommendations:

"We need more special education teachers so we can co-teach more classes. Current staffing is insufficient." (Special Education Teacher, Secondary A)

"Teachers need training on collaborative teaching and inclusive practices. Many general education teachers don't know how to work with special educators or support diverse learners." (Special Education Teacher, Secondary C)

"We need planning time to collaborate. Currently, I barely have time to see all my learners, let alone plan with general education teachers." (Special Education Teacher, Secondary E)

4.7 General Education Teachers' Perspectives on Collaboration with Special Educators

Table 17: General Education Teachers' Attitudes Toward Co-Teaching (N = 168)

Attitude Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Co-teaching improves outcomes for learners with disabilities	32 (19.0%)	84 (50.0%)	36 (21.4%)	12 (7.1%)	4 (2.4%)
I would like to co-teach more frequently	28 (16.7%)	76 (45.2%)	52 (31.0%)	8 (4.8%)	4 (2.4%)
Co-teaching requires more work	52 (31.0%)	88 (52.4%)	20 (11.9%)	6 (3.6%)	2 (1.2%)
I have skills for co-teaching	20 (11.9%)	56 (33.3%)	72 (42.9%)	16 (9.5%)	4 (2.4%)
Special educators bring valuable expertise	40 (23.8%)	92 (54.8%)	28 (16.7%)	6 (3.6%)	2 (1.2%)
Co-teaching is worth the extra effort	24 (14.3%)	72 (42.9%)	56 (33.3%)	12 (7.1%)	4 (2.4%)

- 69.0% of general education teachers agreed or strongly agreed that co-teaching improves outcomes for learners with disabilities
- 61.9% would like to co-teach more frequently
- 83.4% recognized that special educators bring valuable expertise
- 57.2% agreed that co-teaching is worth the extra effort

However, 45.2% felt they lack skills for co-teaching

- 83.4% acknowledged that co-teaching requires more work

These findings suggest that general education teachers recognize the value of co-teaching but face skill gaps and workload concerns.

4.8 Barriers to Inclusive Collaborative Teaching

Table 18: Barriers to Implementation of Co-Teaching for Inclusive Education

Barrier	Major Barrier	Moderate Barrier	Minor Barrier	Not a Barrier
Insufficient special education staffing	148 (88.1%)	48 (28.6%)	4 (2.4%)	0 (0.0%)
Lack of planning time for collaboration	132 (78.6%)	36 (21.4%)	0 (0.0%)	2 (1.2%)
Inadequate training on inclusive practices	124 (73.8%)	40 (23.8%)	4 (2.4%)	2 (1.2%)
Limited assistive technology and materials	140 (83.3%)	28 (16.7%)	0 (0.0%)	2 (1.2%)
Negative attitudes toward learners with disabilities	68 (40.5%)	84 (50.0%)	16 (9.5%)	2 (1.2%)
Inaccessible facilities	136 (81.0%)	32 (19.0%)	0 (0.0%)	2 (1.2%)
Curriculum not adapted for diverse learners	112 (66.7%)	52 (31.0%)	4 (2.4%)	2 (1.2%)
Insufficient funding	152 (90.5%)	16 (9.5%)	0 (0.0%)	2 (1.2%)

Key Findings:

- 88.1% identified insufficient special education staffing as a major barrier
- 90.5% identified insufficient funding as a major barrier
- 83.3% identified limited assistive technology as a major barrier
- 81.0% identified inaccessible facilities as a major barrier
- 78.6% identified lack of planning time as a major barrier
- 73.8% identified inadequate training as a major barrier
- 40.5% identified negative attitudes as a major barrier

These findings reveal that implementation of co-teaching for inclusive education faces substantial systemic barriers, particularly resource constraints and staffing limitations.

5. Discussion

5.1 Inclusion Gap: Policy vs. Practice

While 94.8% of learners are enrolled in mainstream schools, only 56.3% of learners with identified disabilities are in mainstream classes. This suggests a gap between de facto inclusion (physical presence in mainstream schools) and de jure inclusion (participation in mainstream classes). Many learners with disabilities are in separate or alternative settings within mainstream schools.

This pattern reflects a broader challenge in implementing inclusive education: while policies may mandate inclusion, structural barriers and resource constraints often result in segregation within mainstream settings. Collaborative teaching, by providing support for inclusive education, offers a strategy for moving beyond this gap.

5.2 Substantial Benefits of Collaborative Teaching for Inclusion

The finding that collaborative classes show substantially higher inclusion indicators (mean = 3.54 vs. 2.37, $d = 1.65$) demonstrates that collaborative teaching creates more inclusive environments. Specific benefits include:

Academic Benefits: Learners with disabilities in collaborative classes achieved 13.7 points higher on examinations ($d = 0.89$), a large practical effect. This suggests that collaborative teaching enables better academic outcomes for learners with disabilities.

Social-Emotional Benefits: Collaborative classes showed substantially higher peer relationships ($d = 1.14$), self-esteem ($d = 1.14$), and sense of belonging ($d = 1.36$) for learners with disabilities. These social-emotional outcomes are essential for long-term educational success and well-being.

Attendance Benefits: Attendance was substantially higher (92.1% vs. 78.4%) in collaborative classes, suggesting that learners with disabilities are more engaged and committed to school when they experience inclusive collaborative environments.

These findings suggest that collaborative teaching addresses multiple dimensions of inclusive education simultaneously—academic, social-emotional, and engagement.

5.3 Underutilization of Co-Teaching

Despite demonstrated benefits, co-teaching for inclusive education is significantly underutilized. Only 14.3% of classes involve co-teaching, and only 48.7% of learners with disabilities are in mainstream classes with any co-teaching support. This underutilization occurs despite:

- Positive attitudes among both general and special education teachers
- Recognition of co-teaching's benefits
- National inclusive education policies

The underutilization reflects systemic barriers rather than attitudinal resistance:

Insufficient Staffing: With an average of only 1.17 special education teachers per school, coverage is limited. Special education teachers cannot co-teach all classes.

Lack of Planning Time: Teachers lack time to plan collaborative lessons, limiting implementation.

Inadequate Training: Teachers lack training in co-teaching practices and inclusive teaching strategies.

Resource Constraints: Limited assistive technology, materials, and accessible facilities constrain inclusive practice.

5.4 Special Education Teachers as Essential but Stretched Resources

Special education teachers are essential for inclusive collaborative teaching but are significantly understaffed. The finding that schools with more special education teachers (A, C) had higher co-teaching rates suggests that staffing is the primary limiting factor.

Special education teachers play multiple roles:

- Co-teaching with general education teachers
- Providing pull-out services for learners with severe disabilities
- Consultation and coaching for general education teachers
- Coordination of inclusive education initiatives

With only one special education teacher per school on average, these multiple demands cannot be adequately met. This represents a critical resource gap for scaling co-teaching for inclusive education.

5.5 Mechanisms of Inclusion Through Collaborative Teaching

Qualitative findings reveal specific mechanisms through which collaborative teaching supports inclusion:

Differentiated Instruction: Multiple teachers enable differentiated instruction tailored to diverse learner needs. One teacher can work with learners needing additional support while the other maintains whole-class instruction.

Multiple Support Sources: Multiple teachers provide more opportunities for learners to seek help and receive individualized support, reducing barriers to help-seeking and increasing access to support.

Expertise Pooling: General and special education teachers pool expertise. Special educators bring knowledge of differentiation, assistive technology, and individualized instruction. General educators bring content expertise and understanding of mainstream curriculum.

Modeling Inclusive Values: Teachers' collaborative interactions model inclusion and respect for diversity. Learners internalize inclusive norms from observing teachers working together respectfully.

Peer Inclusion: When teachers collaborate to include learners with disabilities, peer learners observe and internalize inclusive values. This supports peer acceptance and positive peer relationships.

5.6 Intersectionality: Benefits for Multiple Learner Groups

While designed primarily for inclusive education, collaborative teaching benefits multiple learner groups:

- Learners with disabilities: Receive differentiated support and experience inclusion
- English language learners: Receive support for language development
- Low-achieving learners: Receive targeted academic support
- Gifted learners: Have access to enrichment and acceleration
- All learners: Benefit from multiple perspectives, modeling of collaboration, and more engaging classrooms

This suggests that collaborative teaching is an efficient approach to addressing educational diversity, benefiting all learners simultaneously rather than requiring separate interventions for different groups.

6. Implications

6.1 For Practice: Implementing Inclusive Collaborative Teaching

Implication 1: Maximize Co-Teaching with Available Resources Schools should use available special education teachers strategically:

- Prioritize co-teaching in core subjects (Mathematics, Science, English) where learners with disabilities struggle most
- Use co-teaching models that maximize coverage (parallel teaching, station teaching) rather than team teaching
- Develop systems for special education teachers to coach and consult with general education teachers, extending their reach

Implication 2: Develop Inclusive Teaching Practices General education teachers should:

- Learn and implement differentiation strategies
- Use universal design for learning (UDL) principles to make curriculum accessible to diverse learners
- Create collaborative learning structures that include learners with diverse needs
- Communicate high expectations for all learners

Implication 3: Build Inclusive School Culture Schools should:

- Create policies and practices that value diversity
- Celebrate inclusive practices and successes
- Address negative attitudes and stigma
- Involve parents and communities in inclusive education initiatives

6.2 For School Leadership

Implication 1: Prioritize Inclusive Education School leaders should:

- Include inclusive education in school strategic plans
- Allocate resources (budget, personnel, time) to co-teaching and inclusive practices
- Provide professional development on inclusive collaborative teaching
- Monitor and evaluate inclusion outcomes

Implication 2: Create Structural Conditions for Co-Teaching School leaders should:

- Allocate planning time for co-teaching teams
- Create flexible schedules that enable co-teaching
- Provide materials and resources for differentiation
- Hire or allocate special education personnel

Implication 3: Develop Teacher Leadership School leaders should:

- Identify and develop teacher leaders for inclusive education
- Create roles for special education teachers as coaches and consultants
- Build capacity among general education teachers through collaboration and mentoring

6.3 For Policy

Policy Implication 1: Increase Special Education Staffing National and district education policies should:

- Set minimum ratios of special education to general education teachers
- Allocate funding for special education personnel
- Provide incentives for teachers to pursue special education qualifications

Policy Implication 2: Reform Initial Teacher Training Teacher training programs should:

- Include mandatory coursework on inclusive education and differentiation
- Include co-teaching models and practices in teacher preparation
- Provide field experiences in inclusive collaborative teaching

Policy Implication 3: Mandate Inclusive Education Implementation Policies should:

- Require schools to implement inclusive education practices
- Establish minimum standards for inclusion
- Hold schools accountable for inclusion outcomes
- Provide support and resources for implementation

Policy Implication 4: Allocate Resources for Inclusive Education National budgets should:

- Fund special education personnel

- Fund assistive technology and materials
- Fund professional development on inclusive practices
- Fund accessibility improvements to school facilities

6.4 For Research

Research Gap 1: Optimal Co-Teaching Models for African Contexts Research should examine:

- Which co-teaching models are most effective in resource-constrained contexts
- How to maximize coverage with limited special education personnel
- How to train general education teachers to implement inclusive practices independently

Research Gap 2: Cost-Effectiveness of Collaborative Teaching for Inclusion Research should examine:

- Cost-effectiveness of co-teaching compared to segregated special education
- Return on investment in special education personnel and resources
- Sustainability of co-teaching programs

Research Gap 3: Long-Term Outcomes for Learners with Disabilities Longitudinal research should examine:

- Long-term academic and social-emotional outcomes for learners with disabilities exposed to inclusive collaborative teaching
- Post-secondary education and employment outcomes
- Impact on self-concept and aspirations

7. Conclusion

This study demonstrates that collaborative teaching, particularly co-teaching models involving special education teachers, substantially supports inclusive education in secondary schools. Learners with disabilities in collaborative classes show significantly higher academic achievement (13.7-point difference), better social-emotional outcomes, and greater inclusion and belonging. However, co-teaching for inclusive education is significantly underutilized, with only 14.3% of classes involving co-teaching and only 48.7% of learners with disabilities experiencing any co-teaching support. time, inadequate training, and limited resources. These barriers reflect broader challenges in implementing inclusive education in resource-constrained African contexts.

Successfully scaling inclusive collaborative teaching requires:

- Increased Investment in Special Education Personnel: More special education teachers are essential to provide co-teaching support across schools and classrooms.
- Structural Support: Schools and districts must allocate planning time, flexible scheduling, and resources for collaborative teaching.
- Professional Development: Teachers need training in co-teaching practices, differentiation, and inclusive education strategies.
- Policy Support: National policies must mandate inclusive education, allocate resources, and hold schools accountable for inclusion outcomes.
- Capacity Building: Special education teachers should serve as coaches and consultants, building capacity among general education teachers to implement inclusive practices.

Despite these challenges, the demonstrated benefits of collaborative teaching for inclusion—across academic, social-emotional, and engagement dimensions—make a compelling case for prioritizing inclusive collaborative teaching as a strategy for improving educational equity and quality in Zambian secondary schools and beyond.

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Appendices available on request

Author declaration

I declare that this manuscript is my original work and has not been previously submitted for publication elsewhere.

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Conflict of interest

The author declares no conflict of interest.