

Effects of Multisensory Teaching Methods on Students' Achievement in English in Inclusive Classrooms in Rwanda

Habiyambere Ernest¹, Twagirumukiza Gratien², Mutarambirwa Emmanuel³, MUTIMUKEYE Leon⁴, Hategekimana Emmanuel⁵

¹Department of Educational Administration and Management, Chhatrapati Shahu Ji Maharaj University, Kanpur.

²Department of Mathematics with Education, Chhatrapati Shahu Ji Maharaj University Kanpur.

³Department of Business Administration, Chhatrapati Shahu Ji Maharaj University, Kanpur.

⁴Department of Education linguistics, Chhatrapati Shahu Ji Maharaj University, Kanpur.

⁵Department of Arts and Humanities, University of Gitwe.



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Corresponding Author:

Habiyambere Ernest

Abstract: This study examined the effects of multisensory teaching methods on students' achievement in English in inclusive classrooms at G.S. HVP Gatagara in Rwanda. The study employed a quantitative exploratory research design involving 69 respondents composed of students, English teachers, the dean of studies, and the head teacher. Data were collected using questionnaires, observation, and document analysis. Statistical analysis revealed that 69.6% of respondents strongly agreed that multisensory teaching methods improve English instruction, while 30.4% agreed. Findings further indicated that multisensory instruction positively contributed to students' English achievement through improved communication skills, increased learner engagement, enhanced memory retention, and better academic performance. However, the implementation of the approach faced challenges including inadequate teacher training (45%), insufficient teaching resources (31.8%), overloaded curriculum content (17.4%), and overcrowded classrooms (5.8%). The study concludes that multisensory pedagogy significantly improves English learning outcomes in inclusive educational settings and recommends strengthened teacher professional development, adequate instructional resources, and institutional support for effective implementation.

Keywords: Multisensory teaching, English achievement, inclusive education, Rwanda, language learning, teaching methods

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Introduction

The landscape of contemporary education is defined by a profound paradigm shift toward student diversity, equity, and universal access. Modern classrooms are no longer homogeneous environments; instead, they represent a rich tapestry of cultural backgrounds, socio-economic realities, linguistic proficiencies, and varied cognitive profiles. This increasing diversity has rendered traditional, monolithic, "one-size-fits-all" teaching strategies obsolete, as they fail to accommodate the nuanced variations in how individuals process, encode, and recall information. To ensure that every student has an equal opportunity to succeed, educational systems must pivot toward flexible instructional strategies capable of addressing different learning styles, cognitive speeds, and educational needs simultaneously. Among these progressive approaches, multisensory teaching methods have become increasingly important because they engage learners through visual, auditory, tactile, and kinesthetic experiences simultaneously (Sarudin et al., 2019).

Multisensory instruction operates on the foundational psychological and neurological premise that human learning and memory are optimized when information is processed through multiple sensory channels concurrently. Rather than relying solely on abstract verbal lectures or static textbook readings which tend to privilege a narrow band of learners while alienating others a multisensory framework deliberately creates interconnected neural pathways. In English language education, this holistic engagement has been structurally associated with improved comprehension, retention, and communication competence. Language acquisition is an inherently complex cognitive task, requiring the mastery of phonetics, morphology, syntax, semantics, and pragmatics. When a student can visually perceive a language pattern, hear its acoustic properties, touch a physical representation of its structure, and execute a corresponding bodily movement, abstract linguistic concepts become concrete, leading to deeper cognitive processing, enhanced word recognition, and more durable semantic retrieval (Sarudin et al., 2019).

Globally, educational systems have progressively adopted learner-centered pedagogies aimed at improving learning outcomes for all students, including learners with disabilities. International frameworks, such as the United Nations Sustainable Development Goal 4 (SDG 4) and the principles of Universal Design for Learning (UDL), have legally and ethically compelled nations to dismantle restrictive, exclusionary traditions in schooling to provide equal learning opportunities to students with diverse needs (Newman, 2019). In alignment with these global movements, Rwanda has undertaken ambitious, systemic educational reforms over the past decade (Tabaro, 2018). In Rwanda, the competence-based curriculum promotes active participation, creativity, and critical thinking through interactive teaching methods (Tabaro, 2018). This national curriculum explicitly shifts the classroom dynamic away from passive rote-memorization toward an active, experiential paradigm where language is treated as a practical vehicle for communication. Teachers are therefore encouraged to employ instructional approaches that support meaningful learning experiences in inclusive classrooms, ensuring that the transition to English as the primary medium of instruction does not become an insurmountable barrier to academic advancement (Kwok, 2024).

Within this national educational landscape, Groupe Scolaire HVP Gatagara represents a unique inclusive educational setting where students with and without disabilities learn together. As an institution historically dedicated to the education, medical rehabilitation, and social integration of children with physical, sensory, and cognitive impairments, it presents an operational microcosm of true pedagogical inclusion (Uwimbabazi et al., 2023). Such learning environments require innovative teaching methods capable of accommodating learners with diverse abilities, where a single teacher must simultaneously engage students with varying degrees of sight, hearing, physical mobility, and neurodiversity. However, a significant gap remains between the progressive ideals of national frameworks and actual classroom realities, often exacerbated by systemic issues like high student-teacher ratios and limited instructional resources (Kwok, 2024). Despite increasing advocacy for inclusive education in Rwanda, limited empirical evidence exists regarding the effectiveness of multisensory teaching methods in improving English achievement within localized, resource-constrained contexts. This study was therefore conducted to evaluate the effects of multisensory teaching methods on students' achievement in English at G.S. HVP Gatagara, providing the empirical data necessary to bridge policy aspirations with practical classroom success.

Statement of the Problem

English language proficiency is increasingly recognized as essential for academic success, professional opportunities, and international communication. However, many learners continue to experience challenges in English language acquisition due to differences in learning abilities, instructional strategies, and limited access to learner-centered teaching resources.

Previous international studies have demonstrated that multisensory teaching methods improve literacy development, vocabulary acquisition, reading comprehension, and learner participation. Nevertheless, implementation remains inconsistent, especially in developing countries where schools often face challenges related to teacher preparation, instructional materials, and overcrowded classrooms.

In Rwanda, educational reforms continue to emphasize inclusive education and learner-centered teaching approaches. However, there remains limited research examining the contribution of multisensory teaching methods to students' English achievement in inclusive schools. Although G.S. HVP Gatagara accommodates learners with diverse educational needs, little empirical evidence had been produced regarding how multisensory instruction influences English achievement within this educational context.

The present study therefore sought to fill this research gap by examining the effects of multisensory teaching methods on students' achievement in English.

Objectives of the Study

General Objective

The general objective of this study was to evaluate the effects of multisensory teaching methods on students' achievement in English in inclusive classrooms at G.S. HVP Gatagara.

Specific Objectives

1. To examine students', teachers', and staff perceptions regarding the effectiveness of multisensory teaching methods in English instruction.
2. To identify challenges hindering the implementation of multisensory teaching methods in English classrooms.
3. To assess the relationship between multisensory teaching methods and students' achievement in English.

Literature Review

Multisensory teaching refers to instructional practices that engage multiple senses simultaneously during the learning process. Unlike traditional, single-channel teaching methods that rely almost exclusively on passive listening or reading, this pedagogical approach deliberately activates several sensory modalities at once. Researchers argue that such approaches strengthen cognitive processing because learners use visual, auditory, tactile, and kinesthetic channels together. By presenting information through a unified multi-sensory delivery, abstract language concepts are given concrete form. This helps students decode and organize linguistic inputs through interconnected pathways, which lowers the risk of cognitive overload and makes learning more accessible within diverse educational environments.

Mayer (2017) emphasized that multisensory learning improves comprehension and memory retention because information is processed through different sensory pathways. According to this dual-coding and multi-channel processing theory, the human brain processes visual images and auditory sounds through separate, parallel cognitive tracks. When an English language educator pairs a spoken vocabulary word with a corresponding visual model and a physical object, the student builds a richer, more integrated mental map of the concept. Coffield (2022) further noted that multisensory activities improve literacy development and learner participation. By giving students multiple ways to engage with the text, teachers turn abstract literacy tasks into interactive experiences, which keeps students actively involved and helps them retain core reading skills over the long term.

International studies conducted in Canada, Singapore, the United Kingdom, and the United States indicate that multisensory instruction improves language acquisition, vocabulary development, pronunciation, and reading comprehension. In these highly diverse and inclusive educational systems, structured

literacy frameworks—such as the Orton-Gillingham approach—frequently use multi-modal pathways to support foundational reading skills. By integrating phonics chants, interactive word-building games, and visual text mappings, these frameworks help students form strong connections between written letters and their corresponding spoken sounds. This multi-pathway structure has proven highly effective for accelerating target language acquisition among both native speakers and English language learners.

Within these global contexts, learners with disabilities particularly benefit because the approach provides multiple pathways for understanding instructional content. In a traditional text-and-lecture classroom, a student with a visual, auditory, or cognitive learning difference faces immediate barriers to accessing information. Multisensory teaching provides alternative entry points into the curriculum. For instance, a student with low vision can rely on auditory chants and physical, tactile letters to master spelling patterns, while a student with a hearing impairment can use visual cues and physical movements to understand language structures. This flexible configuration ensures that an individual sensory barrier does not prevent a student from participating or achieving academic success.

In African educational contexts, multisensory teaching has also shown positive effects on English achievement. As many African nations transition toward learner-centered, competence-based educational models, researchers have increasingly investigated teaching methods that can bridge the gap between regional languages and English, which often serves as the official medium of instruction. Odeke (2019) observed that multisensory activities improve learner engagement and vocabulary retention. When classrooms move away from passive, choral repetition and instead incorporate real-world objects, localized visual aids, and interactive speaking activities, students develop a more functional, durable command of the language.

Furthermore, the benefits of these strategies extend beyond test scores to include vital affective and behavioral changes in students. Walker (2017) reported that learners participating in multisensory activities demonstrate greater confidence, participation, and communication competence. In many language classrooms, students experience high levels of anxiety when speaking an unfamiliar language, which can lead to withdrawal and silence. By using movement-based strategies like Total Physical Response (TPR), collaborative role-play, and localized communication games, teachers can reduce student anxiety. This active involvement helps students build the confidence needed to use English expressively, improving their practical communication skills in inclusive settings.

Despite these advantages, several studies have identified barriers affecting effective implementation. Moving from a traditional, lecture-based classroom to an active, multi-sensory environment requires significant institutional adjustments and resource support, which are often lacking in developing school systems. Henry (2021) highlighted inadequate teacher preparation, insufficient instructional resources, and overcrowded classrooms as major challenges. Without intensive, ongoing training in inclusive pedagogy, teachers often struggle to manage large class sizes while trying to distribute and utilize hands-on tactile materials for students with varying learning needs.

These structural challenges are further compounded by rigid institutional demands and limited professional support networks. Jubran (2021) also observed that curriculum overload and limited

professional development opportunities reduce teachers' ability to implement learner-centered pedagogies effectively. When instructors are forced to cover an extensive, content-heavy syllabus under tight time constraints, they often default to fast, teacher-centered lectures to finish the material on schedule. Without regular professional development, coaching, and a reliable supply of low-cost instructional aids, teachers find it difficult to sustain the creative effort needed to plan and execute multisensory language lessons.

The present study contributes to existing literature by examining multisensory teaching methods within an inclusive Rwandan educational environment. While global and regional research strongly supports the theoretical benefits of multi-modal instruction, there remains a critical shortage of empirical data evaluating these strategies within Rwanda's specific school context—characterized by the transition to the Competence-Based Curriculum (CBC) and the use of English as the primary medium of instruction. By focusing on Groupe Scolaire HVP Gatagara, this study examines how visual, auditory, tactile, and kinesthetic interventions directly influence English language performance in a real-world inclusive classroom. Ultimately, this research helps fill an important data gap, providing practical, field-tested evidence for local policymakers, school administrators, and special needs educators.

Theoretical Framework

The theoretical foundation of this study is grounded in Dugan Laird's Sensory Stimulation Theory, which states that learning becomes more effective when multiple senses are stimulated simultaneously (Laird, 1985). Moving away from traditional instructional paradigms that rely heavily on single-mode, verbal transmission, Laird argued that the cognitive assimilation of new concepts is directly proportional to the variety and intensity of sensory inputs a learner experiences. According to Laird, learners retain information better when instructional strategies engage sight, hearing, touch, movement, and other sensory experiences. In an educational context, this implies that teaching should not be treated as an abstract, lecture-only exercise; rather, it should be designed as a multi-layered sensory environment where information is distributed across different physical channels.

The theory further suggests that learning environments should provide opportunities for learners to actively interact with instructional materials through different sensory modalities. When a learner interacts with content through more than one physical channel, the brain constructs multiple paths of retrieval for that specific information. Instead of relying on a single auditory or visual memory trace, the cognitive architecture builds a network of interconnected references. Such experiences strengthen neural connections and improve memory retention, comprehension, and learner participation. For an inclusive classroom, this multi-pathway network is especially critical; it provides students who have diverse sensory or cognitive styles with alternative entry points into the subject matter, ensuring that a barrier in one channel does not result in an absolute barrier to learning (Mweru, 2018).

In English language teaching, multisensory instruction aligns with Sensory Stimulation Theory because learners are exposed to visual aids, songs, role plays, tactile activities, movement exercises, and interactive classroom experiences that support language acquisition. Language learning involves a complex mix of phonetic decoding, visual recognition, and expressive motor skills. When an

instructor uses Laird's principles to build a lesson for example, pairing a written word with a rhythmic phonic chant, a physical item to touch and a dramatic action to perform the abstract rules of English become concrete. This layered stimulation allows students to internalize vocabulary, pronunciation, and syntax patterns through their strongest sensory modalities while simultaneously strengthening their weaker channels.

The theory therefore provided a suitable framework for understanding how multisensory teaching methods influence students' achievement in English within inclusive classrooms. By analyzing the classroom dynamics at G.S. HVP Gatagara through the lens of Sensory Stimulation Theory, this study explores the direct relationship between multi-channel lessons and academic outcomes. The framework helps explain why moving away from traditional, lecture-heavy teaching and toward visual, auditory, tactile, and kinesthetic inputs can close achievement gaps, increase classroom engagement, and support the diverse learning needs of students with and without disabilities.

Research Methodology

The study employed a quantitative exploratory research design to systematically examine the target population, which consisted of 223 individuals including students, English teachers, the dean of studies, and the head teacher at G.S. HVP Gatagara. Using Yamane's (1967) sampling formula, a representative sample size of 69 respondents was obtained, comprising 64 students, 3 English teachers, the dean of studies, and the head teacher. Simple random sampling was used to select the student participants to ensure an equal and unbiased chance of selection, while purposive sampling

was employed to select the teachers and school administrators based on their specific professional expertise and institutional roles. Data collection methods included structured questionnaires to gather primary metrics, classroom observations to record real-time instructional dynamics, and document analysis of academic and administrative records to verify contextual data. The resulting quantitative data were analyzed using descriptive statistics, such as frequencies and percentages, to identify clear patterns and trends across the variables. Throughout the research process, strict ethical considerations including securing informed consent and assent, maintaining participant confidentiality and anonymity through numeric coding, and ensuring completely voluntary participation were respected and maintained.

Presentation and Analysis of Findings

This section presents the empirical results, statistical analysis, and qualitative interpretations of the data collected to evaluate the effects of multisensory teaching methods on students' achievement in English in inclusive classrooms at Groupe Scolaire HVP Gatagara. The data were gathered using a mixed-methods approach, combining quantitative metrics from questionnaires and national examination records with qualitative insights from classroom observations and interviews with teachers, the dean of studies, and the head teacher. The presentation is organized into sequential thematic sections, beginning with demographic and professional profiles, followed by statistics on perceptions, frequency of method deployment, areas of academic improvement, and implementation barriers. Each data set is structured in tables and interpreted through the theoretical lenses of Cognitive Load Theory and Sensory Stimulation Theory.

Table 1: Demographic Characteristics of Respondents

Demographic Variable	Category	Frequency (N=69)*	Percentage (%)
Gender	Male	35	50.7
	Female	34	49.3
Age Group	12–14 years old	26	38.0
	15–17 years old	35	51.0
	18 years and above	8	11.0

The demographic data demonstrates a highly balanced gender distribution within the sample at G.S. HVP Gatagara, with males accounting for 50.7% and females comprising 49.3%. This balance minimizes gender-based bias and reflects equitable access to inclusive education at the institution. In terms of age, the vast majority of the respondents (89.0%) fall between 12 and 17 years

old, with the 15–17 age bracket forming the largest single cohort at 51.0%. This age profile aligns precisely with the typical age range for upper primary and lower secondary school cycles in Rwanda, confirming that the data captures the primary target demographic experiencing classroom language acquisition.

Table 2: Educational Qualifications and Experience of Staff

Professional Variable	Category	Percentage (%)
Educational Qualification	Bachelor's Degree	60.0
	Postgraduate Diploma in Education (PGDE)	20.0

	Master's Degree	20.0
Professional Experience	More than 6 Years	80.0
	6 Years and Below	20.0

The professional profile of the educators and school administrators points to a highly qualified and experienced staff. Every participating staff member (100%) holds a university degree, with 60.0% possessing a Bachelor's degree and a significant 40.0% holding advanced professional training (20.0% PGDE and 20.0% Master's degrees). Furthermore, 80.0% of these professionals

possess more than six years of teaching experience. This high baseline of academic qualification and deep instructional experience suggests that the educators are structurally well-equipped to understand complex inclusive pedagogies and provide reliable, informed evaluations of multisensory teaching implementations.

Perceptions and Usage of Multisensory Teaching Methods

Table 3: Perceptions and Frequency of Multisensory Method Usage

Dimension	Category	Percentage (%)
Perceived Improvement in English	Strongly Agree	69.6
	Agree	30.4
	Disagree / Strongly Disagree	0.0
Frequency of Classroom Usage	More often (Frequently)	89.5
	Occasionally	7.6
	Rarely / Never	2.9

The empirical findings show a powerful, unanimous consensus regarding the value of multi-modal instruction. Combined, 100% of the respondents agreed that multisensory teaching methods improve English language instruction, with more than two-thirds (69.6%) expressing strong agreement. This absolute endorsement is closely mirrored by actual classroom practice: 89.5% of

respondents indicated that teachers deploy these strategies "more often," while only a small fragment (7.6%) noted occasional use. This high frequency of use demonstrates that the school has structurally embraced visual, auditory, tactile, and kinesthetic practices, making it a functional environment for evaluating these methods.

Implementation Challenges

Table 4: Institutional Barriers Affecting Implementation

Identified Challenge	Percentage (%)	Ranking
Inadequate Teacher Training	45.0	1st
Insufficient Instructional Resources	31.8	2nd
Overloaded Curriculum	17.4	3rd
Overcrowded Classrooms	5.8	4th
Total	100.0	

Despite the positive perceptions and high usage rates, teachers and administrators face distinct institutional barriers. Inadequate teacher training emerged as the primary bottleneck, cited by 45.0% of respondents, highlighting a clear gap in specialized professional development for adaptive, inclusive language delivery. Insufficient instructional resources (31.8%) was identified as the second major

challenge, which underscores the difficulty of securing or making concrete tactile and visual aids in resource-constrained environments. Curriculum overload (17.4%) and overcrowded classrooms (5.8%) also restrict the flexible schedule and physical space required to run hands-on, sensory-rich lessons effectively.

Student Achievement and National Examination Trends

Table 5: Perceived Impact on Specific Areas of Student English Achievement

Domain of Improvement	Percentage (%)
Improved Communication Competence & Higher Exam Scores	45.0
Improved Memory Retention	20.3
Enhanced English Skills Development	18.8
Improved Learner Engagement	11.6
Improved Pronunciation Accuracy	4.3
Total	100.0

When looking at the direct impact on learning outcomes, the largest share of respondents (45.0%) associated multisensory teaching with a combined increase in raw exam scores and functional communication competence. The remaining 55.0% of respondents identified improvements in specific cognitive and behavioral areas: 20.3% observed better long-term memory

retention, 18.8% noted broader language skill development, and 11.6% saw higher active classroom engagement. These findings suggest that engaging multiple senses concurrently helps turn abstract language rules into accessible, memorable experiences for diverse learners.

Table 6: English National Examination Grade Distributions (2022–2023)

Performance Metric	National Exam Grade Achieved	Percentage of Students (%)
Positive Performance Cohort	Grade 5	39.0
	Grade 6	23.0
Remaining Cohorts	Other Grades / Classifications	38.0
Total		100.0

The qualitative and perceptual data are strongly supported by objective administrative metrics from the school's examination archive. In the 2022–2023 academic year national examinations, a combined majority of 62.0% of the inclusive student body achieved top marks, with 39.0% earning Grade 5 and 23.0% earning Grade 6 in English. The fact that these positive performance trends remained steady in subsequent academic years indicates that the school's ongoing commitment to multi-sensory and learner-centered instruction yields stable, long-term academic success, even within a highly diverse inclusive setting.

Discussion of Findings

The findings of this study support international research emphasizing the effectiveness of multisensory teaching methods in improving learner achievement and participation. The strong positive perceptions expressed by respondents confirm that multisensory instruction supports inclusive classroom learning by accommodating diverse educational needs.

The improvement in communication competence, memory retention, and learner engagement observed in this study supports Mayer's (2017) argument that multisensory learning strengthens

cognitive processing through simultaneous stimulation of multiple senses.

The findings also align with Walker (2017) and Odeke (2019), who observed that multisensory teaching improves literacy development and learner motivation. Students participating in multisensory activities become more active participants in learning processes and demonstrate greater confidence in communication.

The statistical findings of this study further demonstrate that multisensory teaching methods contribute positively to students' academic achievement. The high percentage of respondents reporting improved communication competence and examination performance indicates that learner-centered pedagogies can significantly improve English language outcomes.

However, implementation challenges identified in this study reflect concerns raised by Henry (2021) and Jubran (2021). Teachers require adequate training, instructional materials, and institutional support to effectively implement multisensory pedagogies in inclusive educational settings.

Implications for Inclusive Education

The study has important implications for inclusive education policy and practice in Rwanda. First, the findings demonstrate that multisensory instruction can significantly improve learning outcomes for students with diverse educational needs.

Second, teacher preparation programs should integrate multisensory instructional strategies into professional development initiatives. Teachers require practical knowledge and classroom management skills capable of supporting inclusive educational environments.

Third, schools should allocate sufficient instructional materials including visual aids, tactile resources, auditory technologies, and learner-centered classroom facilities that facilitate multisensory learning experiences.

Finally, policymakers should review curriculum demands and classroom conditions to ensure that teachers have adequate time and support to implement learner-centered pedagogies effectively.

Conclusion

This study demonstrated that multisensory teaching methods positively influence students' achievement in English within inclusive classrooms at G.S. HVP Gatagara. Statistical findings revealed strong positive perceptions regarding multisensory instruction and its contribution to communication competence, learner engagement, memory retention, and examination performance.

The study further established that learners within inclusive educational environments benefit from teaching approaches that engage multiple senses simultaneously. However, successful implementation requires adequate teacher preparation, sufficient instructional resources, manageable class sizes, and institutional support.

The findings contribute significantly to educational research in Rwanda by providing empirical evidence regarding the effectiveness of multisensory pedagogy within inclusive schools.

Recommendations

Educational policymakers should strengthen teacher professional development programs focusing on multisensory instructional strategies and inclusive classroom management.

School administrators should ensure the availability of adequate instructional resources including visual aids, tactile materials, auditory technologies, and learner-centered classroom facilities.

Teachers are encouraged to continuously integrate multisensory activities into English instruction to improve learner participation, communication competence, retention, and academic achievement.

Future researchers should conduct comparative studies involving multiple schools and subjects to further examine the effectiveness of multisensory teaching methods across different educational contexts.

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