Indonesian Journal of Education and Pedagogy
Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

Enhancing cognitive engagement through movement: Investigating the impact of kinaesthetic learning activities on learners with intellectual disabilities in Lagos State

Olaotan Oladele Kuku
Department of Educational Psychology,
Federal College of Education (Technical), Akoka-Yaba, Lagos State, Nigeria

Correspondence
Email: kuku.olaotan@fcetakoka.edu.ng

Received:	Revised:	Accepted:	Published:
10 September 2025	12 November 2025	30 November 2025	31 December 2025

How to cite (APA 7th style): Kuku, O. O. (2025). Enhancing cognitive engagement through movement: Investigating the impact of kinaesthetic learning activities on learners with intellectual disabilities in Lagos State. *Indonesian Journal of Education and Pedagogy, 2*(3), 244-255. https://doi.org/10.61251/ijoep.v2i3.264

Abstract

Education remains the right of every child. However, learners with intellectual disabilities regularly encounter noteworthy challenges in accessing and benefiting from learning in conventional classroom settings. As a result, this study seeks to examine the impact of kinaesthetic learning activities on the cognitive engagement of students with intellectual disabilities in special needs schools across Lagos State, Nigeria. The study employed a quasi-experimental pre-test/post-test control group research design. The study involved 60 learners selected from two special schools in Lagos state using simple random and purposive sampling. An Observation Checklist was used to collect data on cognitive engagement. The data collected were analysed using descriptive statistics (such as mean, standard deviation, mean difference) and inferential statistics (analysis of covariance). The hypotheses were tested at 0.05 level of significance. The study revealed that learners who were engaged with kinaesthetic learning activities showed significantly higher levels of cognitive engagement compared to their counterpart taught with the conventional method. In addition, gender was observed to have no significant impact on the cognitive engagement of learners. Based on the findings, one of the recommendations given was that special need schools in Lagos State should incorporate kinaesthetic learning activities to enhance engagement and skill acquisition among students with intellectual disabilities.

Keywords: *cognitive engagement; inclusive education; intellectual disabilities; kinaesthetic learning; special needs education*

INTRODUCTION

Education is widely recognized as a fundamental human right and a vital catalyst for social, economic, and personal development. Nevertheless, pupils with intellectual disabilities often encounter distinctive challenges in their educational journey, particularly when it comes to engaging with learning processes that foster meaningful participation and skill development. According to the American Psychiatric Association (2022), intellectual disabilities are characterised by significant restrictions in intellectual functioning and adaptive behaviour, affecting learning, communication, and everyday social skills. In Nigeria's educational system, despite acknowledging the significance of inclusive education

Indonesian Journal of Education and Pedagogy
Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

in serving learners with various needs, substantial gaps could be observed in addressing the identified challenges faced by learners with intellectual disabilities.

Kinaesthetic learning activities are gradually being explored as an intervention to effectively engage learners with intellectual disabilities. This approach of learning involves applying activities such as physical movement and tactile experiences to support cognitive, linguistic, and social development. Research indicates that kinaesthetic activities can substantially improve learning outcomes by strengthening neural connections that underpin memory, attention, and processing speed (Ngong, 2019; Khasawneh, 2024; Rosenblum et al., 2020; Supriatna & Ediyanto, 2022). Activities including blowing balloons, manipulating playdough, and tracing shapes provide tactile and kinaesthetic experiences that aid the development of fine motor skills (Anieto, 2022) and hand-eye coordination, both of which are vital for writing and other academic tasks (Khasawneh, 2024).

Adopting kinaesthetic learning activities could offer considerable benefit in Nigeria's special needs education framework. According to Wardoyo and Utanto (2025), integrating movement-based learning strategies into the curriculum would achieve the double objectives of enhances cognitive outcomes and contributing to the development of social and emotional skills. Besides increasing the interactivity of learning, these activities have adequately catered for diverse sensory needs of the learners. Additionally, it has reduced behavioural issues commonly associated with intellectual disabilities. The view of Kassim and Nordin (2024) on kinaesthetic learning styles, they opined that the use of teaching methods that align with student learning ability. This may be due to the approach emphasis on prioritizing the specific needs and strengths of the learner, it creates a more inclusive environment that supports individual learning styles through highly specialized and effective instruction. However, Adeniyi and Olufemi-Adeniyi (2023) identified several benefits of interventions in the school, but its implementation may be constrained by factors such as insufficient teacher training, lack of resources, and persistent societal misconceptions about disability in special needs schools in Nigerian.

Learning engagement is a crucial determinant of educational success for pupils with intellectual disabilities. It refers to the degree to which learners actively participate in educational tasks, exhibiting motivation, focused attention, and persistence (Fredricks et al., 2019). Research shows that pupils with intellectual disabilities often display low engagement, largely due to cognitive and emotional difficulties that impede meaningful interaction with the curriculum (Shin et al., 2022). Kinaesthetic learning activities have been identified as effective tools for overcoming these barriers by providing multisensory experiences that capture interest and maintain attention (Abah et al., 2024; Bryant, 2023; Simamora et al., 2025).

Special needs school in Lagos State, Nigeria are gradually adopting creative teaching approaches to aid learning outcomes among learners with intellectual disabilities. Nevertheless, the effectiveness of kinaesthetic learning activities on learners' engagement has not been optimally explored. Studies have shown that learners showed greater interest and improved achievement when taught through kinaesthetic instruction (Abah et al., 2024; Wagner, 2014). This suggest that active, concept-based instruction enhances engagement, understanding, and functional thinking more effectively. Sensory–motor activities play a vital role in helping children learn from their environment, and by bridging theory and practice, kinaesthetic learning approaches extend beyond academic achievement to enhance sensory awareness, early perceptual skills, and children's social and emotional well-being (Dunn, 2019; Hong & Rumford, 2020). Adetoro et al. (2022) observed inadequate study in this area within the Nigeria educational system and urged for more empirical

Indonesian Journal of Education and Pedagogy
Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

studies to comprehensively assess the effectiveness of the kinaesthetic learning activities on learning engagement.

The study was hinged on the operational strategy derived from Sensory Integration (SI) Theory. It was originally proposed by Ayres (2019) and it posits that the brain's ability to interpret and organise sensory information (such as sight, sound, touch, movement and gravity) received from the environment is fundamental to producing appropriate motor and behavioural response. These responses form the basis for learning self-regulation and adaptive behaviour. This is due to its roots in theories of sensory integration, which suggest that the brain interprets and organizes sensory information from the environment in order to produce suitable responses (Kearney & Lanius, 2022). Thus, the use of kinaesthetic strategies is expected to enhance attention, improve motor planning, and foster functional behaviours that support inclusive and effective learning environments. Case-Smith et al. (2020) proffered kinaesthetic learning activities due to its organised opportunities for sensory exploration and motor coordination.

Due to the socio-cultural and infrastructural challenges faced by the schools, the application of kinaesthetic activities cannot be underscored in special needs schools in Nigeria. Research has shown that the instructional strategies adopted in the process of teaching and learning influence the learning challenges faced by learners with special needs (Alhassan, et al., 2025; Kuku & Adeniyi, 2020; Murungi et. al., 2025). Consequently, teachers often frequently rely on traditional approach that is limited in incorporating diverse needs of learners with intellectual disabilities. Through the integration of kinaesthetic activities into the curriculum, it gives room for better inclusivity that will incorporate various learning abilities and styles.

The National Policy on Education articulates and emphasized the importance of providing equitable access to quality education for all learners, including learners with special needs (Federal Ministry of Education, 2019). This makes the adoption of kinaesthetic learning activities connects with Nigeria's broader educational objectives. The features of kinaesthetic learning activities such as increasing engagement, promoting independence, and enhancing overall learning outcomes for learners with intellectual disabilities will greatly contribute to this goal. However, while Nigeria has established policies to foster special need children and inclusive education, their practical application is stifled by systemic challenges (Abubakar, 2024; Omachi, 2025). The lack of accessible facilities, inadequate training for personnel, and insufficient financial resources serve as critical bottlenecks that prevent the meaningful inclusion of children with varied learning profiles (Omachi, 2025)

The benefits of kinaesthetic learning activities for learners with intellectual disabilities identified in recent studies. Mount (2022) reported that kinaesthetic learning is an effective approach for enhancing the academic performance of students with ADHD and can promote positive social change through increased engagement, self-esteem, confidence, and improved classroom behaviour. In addition, Harapan et al. (2022), emphasize the importance of teaching strategies, such as kinaesthetic instruction which accommodate diverse learning styles in order to create a more inclusive and effective learning environment. Likewise, learners who participated in kinaesthetic learning activities display higher level of communication skills and social interactions than their counterpart who are not exposed to the learning activities. Thus, the benefits of wholistic effect of kinaesthetic learning intervention transcend the academic achievement and include emotional and social development.

Indonesian Journal of Education and Pedagogy
Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

In spite of the increasing evidence on the efficacy of kinaesthetic learning activities, its implementation in Nigerian special needs schools remains inconsistent. Mbaba, et al. (2024) identified policy implementation and the heavy burden of professional training as key factors impeding the smooth transition to a truly inclusive system in Nigeria. However, Adeniyi and Olufemi-Adeniyi (2024), observed that learners with special educational needs encounter multiple challenges both within and outside the school environment, including social, psychological, emotional, and academic difficulties. In order to overcome these barriers, practices such as teacher training and continuous professional development would enhance the skills of teachers in the use of kinaesthetic activities. In addition, inclusive education should be given optimum attention and adequate resources that can create a supportive environment for the use of kinaesthetic intervention should be provided in the special need schools. Besides, community engagement should also be prioritized.

Furthermore, learners with intellectual disabilities in Nigeria and Lagos State in particular, has been enduring significant barriers to meaningful engagement in the learning process despite the advocacy for inclusive education. These barriers appear in the form of limited use of instructional strategies tailored to their unique cognitive and developmental needs. Though, kinaesthetic (sensory motor) learning activities have been proved universally to improve engagement and skill acquisition among learners (Kachur, 2025; Wardoyo & Utanto, 2025) students with special needs, their adoption remains limited in many Nigerian special needs schools. Besides, gender may play a meaningful role in shaping the development of learning skills among learners with intellectual disabilities. The studies of Abah et. al. (2024) and Case-Smith et al. (2020) reported consistence across both male and female students with learning challenges in a multi-sensory environment when developing learning skills.

In view of the need to enhance learning engagement among learners with intellectual disabilities, this study seeks to investigate the effectiveness of kinaesthetic learning activities in promoting cognitive skills acquisition in special needs schools across Lagos State, Nigeria. It is expected that the study will provide practical insights that can inform policy development, guide teacher training, and support the efficient allocation of resources. Consequently, the study aims to advocate for a more inclusive and equitable educational system that ensures learners with intellectual disabilities receive the support that will enable them to reach their optimum potential.

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

(Null)

1. Cognitive engagement of learners with intellectual disabilities in Lagos State special needs schools does not differ significantly between those exposed to kinaesthetic learning activities and those taught using conventional instructional methods.
2. There is no significant difference in the cognitive engagement of male and female learners with intellectual disabilities in Lagos State special needs schools as a result of the experimental conditions.

(Alternative)

1. Cognitive engagement of learners with intellectual disabilities in Lagos State special needs schools differ significantly between those exposed to kinaesthetic learning activities and those taught using conventional instructional methods.

Indonesian Journal of Education and Pedagogy
Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

2. There is significant difference in the cognitive engagement of male and female learners with intellectual disabilities in Lagos State special needs schools as a result of the experimental conditions.

METHOD

A quasi-experimental pre-test/post-test control group research design was used for the study. This design was found to be appropriate because it allowed for the assessment of the effects of kinaesthetic learning activities on learner engagement in special needs schools, without necessitating random assignment-a process that may not be feasible in this context. A total of 60 learners participated in the study with an average of 15. The sample was drawn using a combination of simple random and purposive sampling techniques. Simple random sampling was used to select two special needs schools in Lagos State, while purposive sampling was applied to identify learners with intellectual disabilities within these schools. Both male and female learners were included in the sample.

Data collection involved the use of an Observation Checklist to gather quantitative information on student cognitive engagement during classroom activities. It measures attention span, participation in discussions, task completion, verbal responses, and use of learning materials. Trained observers used the checklist to rate each learner's engagement on a Likert scale (e.g., 1 = low engagement, 5 = high engagement) at specific intervals (typically 10–15 minutes) during classroom sessions.

The Observation Checklist underwent content validation by three experts specializing in measurement and evaluation, as well as special education. These experts reviewed the instrument to ensure it aligned with the study's objectives, as reflected in the research questions and hypotheses. Their feedback and recommended modifications were incorporated into the final version used for reliability testing. To assess the stability of the instrument over time, test-retest reliability was employed. The Observation Checklist was administered to the same group of students at two different points, separated by a two-week interval, in a school not included in the main study. The Pearson correlation coefficient was calculated between the scores from the two administrations. A high correlation coefficient of 0.85 indicated that the Observation Checklist was a reliable instrument.

The administration of the study was organized into four distinct phases: Phase I, Phase II, Phase III, and Phase IV.

Phase I: Preparation Phase. After the selection of the two special needs schools, participants were selected from students with intellectual disabilities enrolled in special needs schools in Lagos State, following the acquisition of parental or guardian consent. Both students and teachers were briefed on the purpose of the study, with assurances of confidentiality and voluntary participation. Data collectors-including teachers, researchers, and classroom aides-participated in a training session to ensure they were familiar with the study's objectives, the instruments to be used, and proper procedures for their application. Teachers received targeted training on the definitions of cognitive engagement, complete with clear examples and non-examples to minimize ambiguity during data collection.

Phase II: Pre-Intervention/Treatment Phase. In this phase, baseline data were collected prior to the intervention. Teachers or trained observers systematically observed and recorded students' engagement during regular classroom activities using the Observation Checklist (OC). The checklist was employed to capture the frequency of behaviours related to cognitive engagement, maintaining consistency in observation duration and context across all students. Observers also noted any significant student

Indonesian Journal of Education and Pedagogy
Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

behaviours or contextual factors, such as distractions or specific needs, during these structured observation sessions.

Phase III: Implementation Phase. The implementation phase involved introducing kinaesthetic learning activities that were developmentally appropriate for students with intellectual disabilities. These activities included tasks designed to stimulate cognitive engagement, such as puzzles, cooperative games, and tactile exercises. The intervention was carried out over a period of 4–6 weeks, with sessions held two to three times per week to ensure adequate exposure and to monitor changes in engagement levels. Trained observers used the Observation Checklist during each session to record students' engagement in real time, completing the checklist after every session to track progress. Detailed notes were made regarding behaviours that were difficult to rate or special circumstances, such as disengagement due to fatigue or sensory overload. When multiple observers participated, they periodically compared and discussed their observations to ensure consistency and reliability in the data collected.

Phase IV: Post-Intervention Phase. Following the completion of the kinaesthetic learning activities, teachers or trained observers conducted a final round of observations using the Observation Checklist. They recorded observable behaviours related to cognitive engagement after the intervention. Observers also documented any notable changes, improvements, or challenges encountered during the session to provide a comprehensive assessment of the intervention's impact.

The ratings obtained from the Observation Checklist were entered into statistical software, such as SPSS or Excel, for analysis. The data were thoroughly cleaned by addressing any missing or incomplete entries, either by excluding them or by gathering additional observations from teachers and raters. Statistical analyses included a comparison of pre- and post-intervention results using Analysis of Covariance (ANCOVA) to determine whether the kinaesthetic learning activities produced statistically significant changes in cognitive engagement. Descriptive statistics, such as frequency distribution tables, percentages, means, standard deviations, and mean difference were also utilized in the study. All hypotheses were tested at the 0.05 level of significance.

RESULTS AND DISCUSSION

Results

Hypothesis 1: Cognitive engagement of learners with intellectual disabilities in Lagos State special needs schools does not differ significantly between those exposed to kinaesthetic learning activities and those taught using conventional instructional methods.

Table 1. Descriptive statistics for cognitive engagement based on experimental groups

Experimental Group	N	Pre-test Score		Post-test Score		Mean Difference
		Mean	Std. Dev.	Mean	Std. Dev.	
Kinaesthetic Learning Group	30	7.75	2.94	12.07	3.71	4.32
Conventional Learning Group	30	7.45	2.54	7.93	2.45	0.48
Total	60	7.60	2.71	10.00	3.75	2.40

Indonesian Journal of Education and Pedagogy
Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

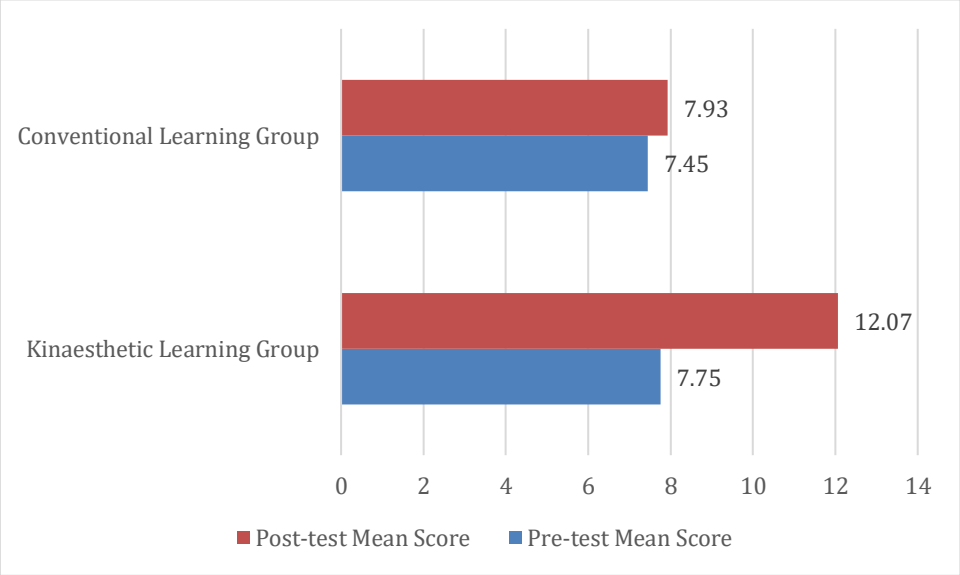

Figure1: Pre- and post-test mean scores of experimental groups

The data in Table 1 indicates that, at the pre-test stage, the mean score for participants in the kinaesthetic learning group was 7.75, while the conventional group had a mean score of 7.45. After the intervention, the post-test mean scores increased to 12.07 for the kinaesthetic learning group and 7.93 for the conventional group. This reflects a mean improvement of 4.32 points for the kinaesthetic learning group, compared to a marginal increase of 0.48 points for the Conventional Group. To determine whether this difference was statistically significant, an Analysis of Covariance (ANCOVA) was conducted, with the results presented in Table 2.

Table 2. ANCOVA result for cognitive engagement based on experimental conditions

Source	Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	662.344	2	331.172	112.592	0.000
Intercept	47.000	1	47.000	15.979	0.000
Covariate	406.077	1	406.077	138.059	0.000
Group	256.267	1	256.267	87.126	0.000
Error	167.656	57	2.941		
Corrected Total	830	59			

Table 2 shows that the calculated F-value for the difference in cognitive engagement among learners with intellectual disabilities in Lagos State special needs schools, comparing those exposed to kinaesthetic learning activities with those taught using conventional methods, was 87.126 ($p < 0.05$). This value was found to be statistically significant, leading to the rejection of the null hypothesis in favour of the alternative. Therefore, it was concluded that there is a significant difference in cognitive engagement between learners exposed to kinaesthetic learning activities and those taught using conventional methods in Lagos State special needs schools.

Hypothesis 2: There is no significant difference in the cognitive engagement of male and female learners with intellectual disabilities in Lagos State special needs schools as a result of the experimental conditions.

Indonesian Journal of Education and Pedagogy
Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

Table 3: Descriptive statistics for cognitive engagement and gender based on experimental groups

Experimental Group	Gender of Participants	N	Pre-test		Post-test		Mean Difference
			Mean	Std. Dev.	Mean	Std. Dev.	
Kinaesthetic Learning Group	Male	18	7.44	2.73	11.72	3.80	4.28
	Female	12	7.83	2.86	12.58	3.68	4.75
	Total	30	7.60	2.74	12.07	3.71	4.47
Conventional Learning Group	Male	15	6.53	2.00	7.07	1.87	0.53
	Female	15	8.67	3.02	8.80	2.70	0.13
	Total	30	7.60	2.74	7.93	2.45	0.33
Total	Male	33	7.03	2.43	9.61	3.84	2.58
	Female	27	8.30	2.92	10.48	3.65	2.19
	Total	60	7.60	2.71	10.00	3.75	2.40

The data presented in Table 3 show that, at the pre-test stage, the mean score for male participants in the kinaesthetic learning group was 7.44, compared to 6.53 in the conventional group. For female participants, the kinaesthetic learning group had a mean score of 7.83, while the conventional group scored 8.67.

Following the intervention, the post-test mean scores for males increased to 11.72 in the kinaesthetic learning group and 7.07 in the conventional group. Similarly, female participants' scores rose to 12.58 in the kinaesthetic learning group and 8.8 in the conventional group. This indicates that males and females in the kinaesthetic learning group experienced greater improvements (4.28 and 4.75, respectively) compared to the marginal increases observed in the conventional group (0.53 for males and 0.13 for females). To assess whether these differences were statistically significant, an Analysis of Covariance (ANCOVA) was conducted, with the results detailed in Table 4.

Table 4. ANCOVA result for cognitive engagement and gender based on experimental conditions

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	664.89	4	166.22	55.37	0.000
Intercept	41.66	1	41.66	13.88	0.000
Covariate	380.75	1	380.75	126.83	0.000
Group	256.90	1	256.90	85.58	0.000
Gender	0.06	1	0.06	0.02	0.888
Group * Gender	2.47	1	2.47	0.82	0.368
Error	165.11	55	3.00		
Total	6830.00	60			
Corrected Total	830.00	59			

Table 4 presents an F-value of 0.82 ($p > 0.05$) for gender differences in cognitive engagement among learners with intellectual disabilities in Lagos State special needs schools, comparing those exposed to kinaesthetic learning activities with those taught using conventional methods. This result was not statistically significant, leading to the retention of the null hypothesis. Therefore, it can be concluded that there is no significant difference

Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

in cognitive engagement between male and female learners with intellectual disabilities in Lagos State special needs schools as a result of the experimental conditions.

Discussion

The outcome of hypothesis one shows a notable difference in the cognitive engagement of learners with intellectual disabilities in Lagos State special needs schools between those exposed to kinaesthetic learning activities and those taught using conventional methods. The observed difference suggests that integrating sensory-motor learning activities into instructional strategies can enhance the cognitive engagement of learners with intellectual disabilities, leading to more effective learning outcomes. This finding is grounded in Sensory Integration theory, which posits that structured, movement-based experiences stimulate and organize multiple sensory pathways. This is in consonance with prior research indicating that such approach can support memory, and problem-solving in children with intellectual disabilities (Ayres, 2019; Case-Smith et al., 2020; Gallahue & Ozmun, 2019; Kachur, 2025; Kassim & Nordin, 2024; Khasawneh, 2024).

Additionally, the study observed no significant gender differences in the cognitive engagement results. Consequently, kinaesthetic learning activities were found potent for both male and female of learners with intellectual disabilities. This outcome aligns with the reports of Abah et al. (2024) and Khasawneh (2024) who noted that sensory-motor (kinaesthetic) learning activities stimulate interest and sustain attention among learners without significant disparity between male and female learners. In the Nigerian context, the National Policy on Education (Federal Ministry of Education, 2019) advocates for equitable access to quality education for all learners, regardless of gender. The current study's findings reinforce this policy direction, demonstrating that kinaesthetic learning activities can help bridge the engagement gap for learners with intellectual disabilities in a manner that is inclusive and non-discriminatory. In addition, Case-Smith et al. (2020) reported that structured sensory-motor interventions improved cognitive, physical, and social outcomes across diverse groups of learners, and did not observe gender as a moderating factor in the effectiveness of such interventions.

CONCLUSION

The study observed the efficacy of kinaesthetic learning activities on the cognitive engagement of learners with intellectual disabilities in special needs schools in Lagos State, Nigeria. The outcome of the study shows that learners who participated in the kinaesthetic learning activities displayed higher levels of cognitive engagement than their counterparts taught with conventional methods. In addition, gender was not observed to be a significant factor when considering kinaesthetic learning activities for learners with intellectual disabilities in special need schools in Lagos State.

Following the findings from this study, it is recommended that kinaesthetic learning method should be further examined through pilot and experimental studies comprising of learners with intellectual disabilities across diverse educational contexts. Insight from such studies will provide empirical evidence and contextual understanding needed for effective adaptation within special education settings and by implications to teachers and learning environment. Besides, special needs schools in Lagos State are encouraged to incorporate kinaesthetic learning activities into their teaching and learning process to enhance engagement and skill acquisition among learners with intellectual disabilities. In addition, gender consideration should not influence the adoption of kinaesthetic learning activities for learners with intellectual disabilities. The study shows that both genders stand to benefit

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

from the learning approach. In conclusion, attaining a sustainable impact requires a gradual and empirically based integration, supported by teacher training and the provision of adequate resources.

REFERENCES

Abah, J., Chinaka, T. W., & Ogbiji, E. O. (2024). Effect of kinesthetic learning on students' interest and achievement in mathematics. *Mathematics Education Journal, 8*(2), 120-136. https://doi.org/10.22219/mej.v8i2.34218

Abubakar, A. N. (2024). Understanding and managing developmental disabilities in Nigeria. *Shodh Sari-An International Multidisciplinary Journal, 3*(4), 251-261. https://doi.org/10.59231/SARI7760

Adeniyi, S. O., & Olufemi-Adeniyi, O. A. (2024). Managing the curriculum to meet the needs of learners with special needs education in Nigeria rural communities: Teachers as critical stakeholders in inclusivity. In *Inclusive Pedagogy in Contemporary Education*. IntechOpen. https://doi.org/10.5772/intechopen.113121

Adetoro, G. A., Adebayo, M. O., & Salami, T. K. (2022). Innovative teaching strategies for special needs education in Nigeria. *International Journal of Inclusive Education, 26*(3), 287-302. https://doi.org/10.1080/13603116.2022.2027202

Alhassan, Z., Musah, B., Issah, A., & Mohammed, B. (2025). Locus of control and academic performance: a correlational study among deaf secondary school students in Ghana and Nigeria. *European Journal of Special Education Research, 11*(2), 115-135. https://doi.org/10.46827/ejse.v11i2.5978

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed.). APA Publishing.

Anieto, E. M. (2022). *The relationship between kinaesthesia, motor performance, physical fitness and joint mobility in children with and without joint hypermobility in Nigeria*. (Master Thesis, Faculty of Health Sciences, Department of Health and Rehabilitation Sciences). Retrieved from http://hdl.handle.net/11427/37013

Ayres, A. J. (2019). *Sensory integration and learning disorders*. Western Psychological Services.

Bryant, A. L. (2023). *Primary teacher experiences with kinesthetic and tactile learning in virtual settings* (Doctoral dissertation, Walden University).

Case-Smith, J., Frolek Clark, G. J., & Schlabach, T. L. (2020). Systematic review of interventions used in occupational therapy to promote cognitive engagement in children with disabilities. *American Journal of Occupational Therapy, 74*(2), 1-12. https://doi.org/10.5014/ajot.2020.038737

Dunn, W. (2019). *The impact of sensory processing on learning and behaviour in children with disabilities*. Routledge.

Federal Ministry of Education. (2019). *National policy on education* (6th ed.). NERDC Press.

Fredricks, J. A., Wang, M. T., & Schall Linn, J. (2019). Investigating engagement in learning: Student and teacher perspectives. *Educational Psychologist, 54*(1), 1-10. https://doi.org/10.1080/00461520.2019.1589745

Gallahue, D. L., & Ozmun, J. C. (2019). *Understanding motor development: Infants, children, adolescents, adults*. Jones & Bartlett Learning.

Harapan, M. A. M., Masriyah, M., & Suharyati, H. (2024). Improving learning outcomes of kinaesthetic learners through a differentiated learning approach. *International Journal of Sustainable Development & Future Society, 2*(2), 70-75. https://doi.org/10.62157/ijsdfs.v2i2.74

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

Hong, C. S., & Rumford, H. (2020). *Sensory motor activities for early development: a practical resource*. Routledge. https://doi.org/10.4324/9780429299735

Kachur, V. (2025). Sensory and play-based learning: How innovative methods help children with special needs learn English. *Pedagogy and Education Management Review*, 2(20), 75–82. https://doi.org/10.36690/2733-2039-2025-2-75-82

Kassim, A., & Nordin, M. N. (2024). An effective teaching aids using visual, auditory and kinaesthetic learning styles for students with special needs. *Special Education [SE]*, *2*(1), e0009. https://doi.org/10.59055/se.v2i1.9

Kearney, B. E., & Lanius, R. A. (2022). The brain-body disconnect: A somatic sensory basis for trauma-related disorders. *Frontiers in Neuroscience, 16*, 1015749. https://doi.org/10.3389/fnins.2022.1015749

Khasawneh, M. A. S. (2024). The role of the multi-sensory environment in developing learning skills among students with learning difficulties in the Asir region. *Kurdish Studies, 12*(1). https://doi.org/10.58262/ks.v12i1.131

Kuku, O. O. & Adeniyi, S. O. (2020). Impact of learning interventions on mathematics achievement among learners with hearing impairment. *Contemporary Educational Researches Journal, 10*(4), 131–149. https://doi.org/10.18844/cerj.v10i4.5214

Mbaba, A. E., Orlunga, B. G. & Echeonwu, J. (2024). Invigorating inclusive education in Nigerian school system: Technological implications for teachers' training institutions. *International Journal of Research in Education and Sustainable Development, 4*(7), 105-113. https://doi.org/10.5281/zenodo.13369338

Mount, B. (2022). *Parents' perceptions of kinesthetic learning and academic performance among students with attention deficit hyperactivity disorder* (Doctoral dissertation, Walden University).

Murungi, E. K., Awori, B. B., & Wamocho, F. I. (2025). Teachers' perceptions of strategies as a determinant of academic achievement in mathematics among primary school learners with hearing loss in Meru and Tharaka-Nithi counties, Kenya. *European Journal of Special Education Research, 11*(2). http://dx.doi.org/10.46827/ejse.v11i2.5943.

Ngong, A. A. (2019). Effectiveness of multisensory learning approach in teaching reading to pupils with dyslexia in ordinary primary schools in Bamenda III Sub Division, Mezam Division, of The North West Region of Cameroon. *International Journal of Trend in Scientific Research and Development*, *3*(5), 915-924. https://doi.org/10.31142/ijtsrd26560

Omachi, A. (2025). Examining the challenges of implementing inclusive education in Nigerian public schools and the influence of corruption on educational development. *Education & Learning in Developing Nations, 3*(2), 44-51. http://doi.org/10.26480/eldn.02.2025.44.51

Rosenblum, S., Golan, G., & Regev, N. (2020). The role of sensory-motor integration in children's learning processes. *Frontiers in Psychology, 11*, 569. https://doi.org/10.3389/fpsyg.2020.00569

Shin, H., Sutherland, K. S., Shin, S. Q., & Conroy, M. A. (2022). Engagement interventions for students with disabilities: A systematic review. *Exceptional Children, 89*(1), 65-84. https://doi.org/10.1177/00144029221082765

Simamora, J. A., Iskandar, I., Weda, S., & Tahir, M. (2025). Student's perceptions and experiences in kinesthetic learning: challenges and benefits. *Klasikal Journal of Education, Language Teaching and Science*, *7*(1), 15-28. https://doi.org/10.52208/klasikal.v7i1.1266

Supriatna, A., & Ediyanto, E. (2022). The implementation of multisensory technique for children with dyslexia. *Indonesian Journal of Disability Studies*, *8*(1), 279-293. https://doi.org/10.21776/ub.ijds.2021.008.01.17

Vol. 2 No. 3 (2025), pp. 244-255

ISSN: 3047-5619
Website: https://journal.yudhifat.com/index.php/ijoep
DOI: https://doi.org/10.61251/ijoep.v2i3.264

Wagner, E. A. (2014). Using a kinesthetic learning strategy to engage nursing student thinking, enhance retention, and improve critical thinking. *Journal of Nursing Education*, *53*(6), 348-351. https://doi.org/10.3928/01484834-20140512-02

Wardoyo, T. H., & Utanto, Y. (2025). Exploring the implementation of kinaesthetic intelligence among students. *Physiotherapy Health Science (PhysioHS)*, *8*(1), 14–22. https://doi.org/10.22219/physiohs.v8i1.40572

Conflict of Interest Statement: The author declares that this study was conducted independently, with no commercial or financial interests that could be viewed as a conflict of interest.