

Influence of Kinesthetic Approach for Effective Curriculum Delivery of Literacy and Numeracy Skills of Pupils in Maiduguri, Borno State, Nigeria

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Abstract

The student-centered approach in teaching is essential for effective curriculum delivery because it prioritizes active participation and diverse needs and interest of the learners for educational development. This study examined the influence of Kinesthetic teaching approach on pupil's literacy and numeracy skills. Three objectives were set for the study and three null hypotheses were generated and tested at 0.05 level of significance to measure the efficacy of kinesthetic approach in teaching literacy and numeracy skills. A quasi experimental design was used. The population of study consists of two thousand four hundred and thirty one pupils in Abbagaram primary school. The sampling technique used for study was convenience sampling to select the sample size of 160 pupils of class six (6) in an intact class of Abbagaram primary school in Maiduguri Metropolitan Council. The instrument used for the study was self-developed instrument name Reading, Vocabulary and Numeracy Performance Test (RVNPT), the reliability of the instrument was conducted using test and retest resulted to 0.88 reliability index using Cronbach Alpha. An independent t-test used as method of data analysis. The findings of study revealed that a kinesthetic teaching approach had positive on improving the academic performance of primary school pupils in both literacy and numeracy skills. The study concluded that the use of kinesthetic approach enhances the pupil's literacy and numeracy skill. The study recommended that there is a need for the teachers to apply the use of kinesthetic teaching approach in order achieve the basic foundational skills of literacy and numeracy. The teachers and schools' administrators need to be trained in form of seminars and workshops on the effectiveness of teaching approaches that encourage use all sense in teaching and learning basic foundational skills of literacy and numeracy.

Keywords: Kinesthetic Approach, Literacy, Numeracy Skills, Curriculum Delivery

Introduction

Need to achieve the children's basic foundational skills of literacy and numeracy is the concern for all stakeholders in education. These skills are very importance and relevance right from the pre-primary to elementary or primary education. Foundational literacy skills are the basic buiding blocks of reading, writing and numeracy skills which are essential for understanding, comprehending written language effectively. In today's 21 century, most teachers still apply outmoded teaching approach which regard as teachers centered approach or conventional approaches of teaching. The teachers centered approaches are hardly stimulate learners' interest and make the learning more companionable. The learners are having different learning styles some may need verbal communication before understanding while others need both sound and images and others need physical interact with some objects before learning. According to Chukwuka, (2014) in the lower level of primary education, pupils need to have real life activities to interact with their paires in order to learn new knowledge. This is because real life activities help the learners to use all the senses to accommodate and learn new knowledge. If the instruction should be accompanied by physical bodily movement, it will go a long way in solving a problem. By doing the said activities, the learners will not only learn the basic literacy skills but also solve the problem related to mathematics and sciences. The Problem-solving is a real-life solution and is not only part of natured and grown-up human being but also to a growing child where he/she require physical, mental and psychological efforts to solve without intervention by an adult. The teacher is a facilitator which guide the learners to acquire the necessary skills and expertise. For the process of the actualization of helping the learner to became sound educated, there is need to apply the teaching methods that evolved them actively into teaching and learning process. One of such methods is the kinesthetic teaching approach.

Kinesthetic learning is known as tactile learning by doing. It is a learning style that evolve the use of physical movement to achieve the learning outcomes. The learning process in kinesthetic approach relies on leaners' active and physical participation through bodily engagements that help in manipulating and discovering new knowledge rather than just a passive listener who might not contribute anything. The learners who are learning in kinesthetic is known as doers. (Griss, 2013). Kinesthetic approach is the learning which requires the use of action to manipulate the materials in teaching through hand-on-learning or doing something's use of organized teaching materials should be in line with the instructional objectives to make learning

more positive and tangible for better understanding of everyone in class.
(Ojonugwa,2022)

Teachmint (2022) reported that the term kinesthetic learning as a learning style in which students learn things by carrying out physical activities instead of listening to lectures in the classroom. The approach entails handling or touching or physical movement of the body in order to learn. The body movement include the use of some tactile techniques and combine the use of visual aids. It also involves the pair participation through physical interaction with the objects to achieve the learning outcomes.

Therefore, the benefits of kinesthetic in language and arithmetic classroom cannot be overemphasis. For instance, in teaching literacy skills like reading and vocabulary, every teacher wants see their learners doing best in reading and vocabulary development but isn't easy always because it challenges to keep the attention of the kids who don't want to glare and the sheet. The Learners in kinesthetic class need to focus on the application of ideas. The experience and ideas learn more through doing instead of listening the verbal instruction by an instructor.

Literacy aspects of reading and vocabulary development skills are another variable used in this study. Reading is a fundamental skill that requires learners to recognize text and make meaning out it. It is a is a basic skill that enables all the learning required by children to transit from the child cognitive developmental skill of language to the man-made skill of reading. From the spoken language, reading is encoded and decoded from various engagement. To this note, it is important that pupils all over the world are required to learn the reading because is foundations of learning. For the productive and successful citizen, reading needs to be taught in school's children at an early age because is central for all learning.

Reading according to Ene, (2016). is the ability to first identify the word, there after read the words, and then connected the word read with the text with the speed, accuracy, expression, and understanding. When learners memorize the sounds and the letters represent and spend time practicing decoding, they eventually begin to build reading fluency. In order to understand what they read, pupils must be able to read fluently whether they are reading aloud or silently. Pupils who are not fluent readers spend their time trying to read the words and are unable to grasp the meaning of the text.

Similarly, Vocabulary is essential to communication and comprehension in any language. Vocabulary Simply refers to as understanding the meanings and acquiring the new words that engage learners in discussions or expressing the ideas, feelings. and

opinions. Vocabulary is another base step of learning any language. Vocabulary Simply refers to as understanding the meanings and acquiring the new words that engage learners in discussions or expressing the ideas, feelings, and opinions. Chalak, (2015) vocabulary define as express of oneself precisely and providing evidence of the richness of one's words use in a text. In spite of its importance in learning a language, the conventional ways of teaching vocabulary deter the development of English learners. Vocabulary knowledge has classified into different stages. These stages start with the understanding of simple words and develop into the complex. It's crucial to strengthen the knowledge of vocabulary to all level of learners in the language teaching.

Additionally, the term numeracy is defined as the understanding and how knowledge of mathematical related ability used to solve some arithmetic problem in the real world. the adult education community to include an array of mathematically related. The numeracy is also an ability to comprehend and work with the given numbers in order Find suitable calculations, measurement and procedures in an appropriate time for specified purpose. using the activities in math lessons to summarizes, add or subtract with the personal experiences it held the understanding the content. There are many ways one can integrate the physical activity into the classroom lesson. For instance, a classroom-based physical activities program that depends on using daily motor activities to boost and engage learners in the learning process which promote hands-on activities during the instruction time. (Ojonugwa., Liman, & Hassan 2023). The use of physical and creative movement in Kinesthetic approach of Teaching help the learners to participate actively in the learning process. The kinesthetic approach of teaching is learning style that advocate the use action and physical of movement. Hakim, (2019) claim activities convey information in kinesthetic approach of teaching is through movement, touching, tactile and some kinesthetic elements like sight and hearing. The kids learn quick when using practical and hands-on activities or learn more by doings.

Curriculum delivery in the 21st century should be focusing on creating a more holistic and inclusive learning environment that prepares learners for rapidly changing world. One of the key trends is the integration of interdisciplinary learning, where subjects are not taught in isolation but rather connected to real-life and social contexts

Similarly, the effective curriculum delivery there is to emphasize the importance of integrating literacy and numeracy skills of learners by using all senses in learning. The use of sense organs are significant curriculum delivery towards a more

student-centered approach, where learners are actively engaged in teaching and learning process through sight, listen, reading, writing, manipulating, physical action and movement. These actions of learners are incorporated through kinesthetic learning strategies, which emphasize the involvement of physical activities and manipulations to help students grasp concepts more effectively. By using movement and hands-on experiences, educators can enhance students' understanding of literacy and numeracy, making these skills more tangible and applicable in real-world situations. (Erstad & Voogt, 2018)

Williamson, (2013) observed that the kinesthetic approach to teaching literacy and numeracy encourages students to learn through doing. For instance, in literacy, students might engage in role-playing or storytelling activities that require them to physically act out narratives, thereby deepening their comprehension and retention of language skills. Similarly, in numeracy, teachers can use manipulatives, such as blocks or measuring tools, to allow students to physically explore mathematical concepts. This trend aligns with the understanding that diverse learning styles exist among students, and kinesthetic activities can cater to those who learn best through movement and tactile experiences.

Statement of the Problem

Basic foundational skills of literacy and numeracy is the concern for all stakeholders in education. Ability to read is one of the essential requirements for the learners to understand and comprehend the content presented. (Hakim, 2019). Reading is one of the receptive language skills that comes after listening. Ability to read is one of the essential requirements for the learners to understand and comprehend the content presented. However, the situation is worrisome as some learners are not interested in reading and lack motivation to learn it and teachers may sometimes lose interest to teach them. Knowing what words mean plays an important part in learning to read. When young children begin reading, they depend on their oral vocabulary (the words used every day in speaking and listening) to understand texts they read. As beginning readers, children use the words they have heard to make sense of the words they see in print. Over time, pupils will develop reading vocabulary - words recognized or used in print. In other dimension, Math is taught as a set of procedures and calculations, when brain research tells us that visual representations and ideas are really important for brain connections and mathematical growth. Visual math tasks enable learners to be creative, and to see the beauty in math. The learners' Mindsets lead to learning behaviors and patterns,

which can result in different learning outcomes. Changing people's mindsets can change their learning pathways. A common misconception among learners that mathematics is a difficult subject. All these consequences as a result of conventional teaching methods used by teachers to create a situation where pupils are not exposed to learning activities that arouse their interest. This style of teaching work against concrete learning where pupils are actively participating in the learning the contents like reading, vocabularies or numeracy. The above descriptions are some of the features of the conventional method of teaching. The above scenario is contrary to the 21st-century teaching strategies with interactive qualities and designs that make learning concrete and practical in the primary school system. Some examples of these 21st-century teaching strategies are illustrious instruction, collaborative learning, cooperative learning, flipped classroom, kinesthetic learning strategy and others. Abdul-Wahhabi (2020) The above opposite scenario calls for this study to determine the influence of kinesthetic approach as an alternative strategy in teaching literacy and numeracy skills to pupils in Maiduguri Metropolitan Council Borno State.

Objectives of the Study

The following objectives were set to guide the study as to determined

1. Influence of kinesthetic approach for effective curriculum delivety of literacy skills
2. Influence of kinesthetic approach for effective curriculum delivety of numeracyskills
3. Influence of kinesthetic approach for effective curriculum delivety of literacy and numeracy skills

Hypotheses

The following null hypotheses were tested at 0.05 level of significance

H₀₁. There is no significant influence of Kinesthetic approach on pupil's performance in literacy skills

H₀₂. There is no significant influence of Kinesthetic approach on pupil's performance in numeracy skills

H₀₃. There is no significant influence of Kinesthetic approach on pupil's performance in literacy and numeracy skills

Methodology

The study examines the influence of kinesthetic approach in teaching literacy (Reading and Vocabulary) and numeracy competency skills. The study covered two

components of literacy skills which are reading comprehension, vocabulary development and numeracy skill. Quasi-experimental design was employed to examine the influence of kinesthetic approach in teaching literacy and numeracy skills. (Kolbe, 2010) Quasi-experiment designs identify a comparison group that is as similar as possible to the treatment group in terms of baseline (pre-intervention) characteristics. The population of the study comprises of two thousand four hundred and thirty one pupils in Abbaganaram primary school in Maiduguri, Borno State, (2023/2024) academic session. Convenience sampling techniques was used to select one hundred and sixty (160) primary six (6) pupils from an two intact classes. The class A experimental group consists eighty (80) pupils while class B control group consists eighty (80) pupils. Pre-test was used to determine the level of their performance in reading, vocabulary and numeracy skills before the treatment. The instrument used for the study was self-developed instrument name Reading, Vocabulary and Numeracy Performance Test (RVNPT). The instrument consists of thirty (30) items from the three components of reading, vocabulary and numeracy skills. In order to ensure that the research instrument was valid both in face and content, the items as contained in the instrument was pilot tested to ascertain the suitability of the questions and the comprehensiveness which resulted to 0.88 reliability index using Cronbach Alpha. The experiment was conducted in eight (8) weeks and the data were collected in three (3) phases:

Pre-test phase: Prior to the experiment, this phase is a preparatory stage where the researcher explained the intention of the study to the schools and request for research assistant. An English language and mathematics teachers were chosen as research assistants. The research assistants employed were trained for few weeks on the influence of kinesthetic approach. The researcher briefed the research assistants as well as the pupils (participants) thereafter; two intact classes were selected class A experimental group were eighty (80) participants while control group class B comprising of boys and girls. This stage lasted for a week.

Treatment phase: This is an actual treatment stage, after assigning the participants into the experimental and the control group, the experimental group was taught using kinesthetic approach teaching while the control group was taught using conventional method. The content of the experiment was the components of literacy skill (Reading and Vocabulary) and numeracy skill. The activities lasted for four (4) weeks

Post-test phase: This is the last and final stage, the researchers together with research assistants administered the designed instrument to both experimental and control group. The participant's responses were score and mark in a scoring sheet already designed. This exercise served as the basis to determine the influence of kinesthetic approach teaching on pupil's performance in reteracy eading, vocabulary and numeracy skills. The data obtained in the pre-test and posttests were analyzed through SPSS. Mean was compared with an independent sample t-test to determine whether a significant difference existed between the pretest and post test scores.

Result

Ho1. There is no significant influence of Kinesthetic approach on pupil's performance in literacy skills

Table 1: Independent samples t-test for mean score of pupil's performance in literacy between pupils taught using Kinesthetic approach and those taught with conventional approach

Variable	N	Mean	Std. Deviation	T	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Experimental	80	11.15	3.490	13.22	158	.000	3.971	5.379
Control	80	6.48	2.506					

An independent sample t-test was conducted to compare the mean score of pupils in literacy skills between those taught using Kinesthetic approach and those taught using the conventional approach. The experimental group which consist of 80 students were taught using the Kinesthetic approach while the control group of an equal number of pupils were taught using the conventional approach. The results indicate a significant difference between experimental group ($M= 11.15$, $SD= 3.49$) and the control group ($M= 6.48$, $SD= 2.506$), [$t(158) = 13.22$, $p = .000 < .05$]. The 95% confidence interval of the difference between means ranged from [3.971 to 5.379] and indicate a difference between the means of the sample. Consequently, the null hypothesis was rejected while

the alternate hypothesis was upheld. This implies that there is a significant influence of Kinesthetic approach on pupils' competencies in teaching reading comprehension.

H₀₂. There is no significant influence of Kinesthetic approach on pupils' competencies in teaching vocabulary development

Table 2: Independent samples t-test for mean score of students in vocabulary development between pupils taught using Kinesthetic approach and those taught with conventional approach

Variable	N	Mean	Std. Deviation	T	df	Sig. (2- tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Experimental	80	3.76	1.150	10.57	158	.000	1.563	2.287
Control	80	1.84	.947					

An independent sample t-test was conducted to compare the mean score of pupils in vocabulary development between those taught using Kinesthetic approach and those taught using the conventional approach. The experimental group which consist of 80 students were taught using the Kinesthetic approach while the control group of an equal number of pupils were taught using the conventional approach. The results indicate a significant difference between experimental group (M= 3.76, SD= 1.150) and the control group (M= 1.84, SD= .947), [t(158) = 10.57, p = .000 < .05]. The 95% confidence interval of the difference between means ranged from [1.563 to 2.287] and indicate a difference between the means of the sample. Consequently, the null hypothesis was rejected while the alternate hypothesis was upheld. This implies that there is a significant influence of Kinesthetic approach on pupils' competencies in teaching vocabulary development.

H₀₃. There is no significant influence of Kinesthetic approach on pupils' competencies in teaching numeracy skills

Table 3: Independent samples t-test for mean score of pupils in numeracy skills between students taught using Kinesthetic approach and those taught with conventional approach

Variable	N	Mean	Std. Deviation	t	df	Sig. (2- tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Experimental	80	14.91	3.555					
				17.176	158	.000	5.835	7.365
Control	80	8.31	2.665					

An independent sample t-test was conducted to compare the mean score of pupils in numeracy skills between those taught using Kinesthetic approach and those taught using the conventional approach. The experimental group which consist of 80 students were taught using the Kinesthetic approach while the control group of an equal number of pupils were taught using the conventional approach. The results indicate a significant difference between experimental group ($M = 14.91$, $SD = 3.555$) and the control group ($M = 8.31$, $SD = 2.665$), [$t(158) = 17.176$, $p = .000 < .05$]. The 95% confidence interval of the difference between means ranged from [5.835 to 7.365] and indicate a difference between the means of the sample. Consequently, the null hypothesis was rejected while the alternate hypothesis was upheld. This implies that there is a significant influence of Kinesthetic approach on pupils' competencies in teaching numeracy skills.

Discussion

The findings of the result from the hypotheses showed that the posttest result of the participants in reading comprehension was significantly high in the score obtained by both experiment with the percentage of 32.4 % for control group and 67.6 % for the experiment. The result revealed that use of kinesthetic approach improved the learner's outcomes in reading, vocabulary and numeracy skills. The finding revealed that the kinesthetic approach had positive influence on pupils literacy and numeracy skills. The mean score of control group was 30.80 while the mean score of experiment was 64.20 and also the standard deviation of .8.895 for the control and 13.101 for the experiment group. The result revealed that after the application of treatment there was significance difference in performance of control and experiment group. This was statistically proven in the score obtained by both control and experiment with the percentage of 32.4 % for control group and 67.6 % for the experiment.

The study rejected the hypothesis which stated there is no significant gender differences on pupils' performance using Kinesthetic approach in teaching Literacy and Numeracy. This was shown in the result obtained in the posttest result of mean score of both male and female participants after the application of the treatment. The mean score obtained by male was 30.80 while the mean score obtained by female 64.20 with the standard deviation of 8.895 for male while 13.101 for female. The result revealed that there was significantly difference between the male and female after the treatment. Thus, hypothesis three suggesting there is no significant difference in the performance of the male/female students taught using kinesthetic approach in teaching literacy and numeracy skills was rejected based on the statistical evident proved from the score obtained. The finding of the study is in agreed with studies conducted by Ojonugwa, (2022). El kader (2018) Ene, and Ashley (2016) reported that Kinesthetic learning approach influence and improved the pupils performance in teaching reading, vocabulary and numeracy skills.

Conclusion

From the findings the study concluded that use of kinesthetic approach enhances learners' performances in reading, vocabulary and numeracy skills. As the result obtained proved the kinesthetic approach positive than conventional method used.

Recommendations

The teachers and school management should be encouraged to adopt the use of kinesthetic approach of teaching strategy in schools especially in primary to enhance their inspiration and achievement in competencies in reading, vocabulary and numeracy skills. The Borno state government, local education authority and state universal basic education should organize the seminars and workshop on need to develop the teachers' capacity building on interactive teaching method like kinesthetic approach. Finally. The study recommended that there is need to provide an interactive teaching aids that can motivate the learners to use physical bodily movement that improve their learning outcomes.

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