SYNTHETIC MULTISENSORY APPROACH AND THE READING SKILLS DEVELOPMENT IN BLENDING OF PUPILS IN LOWER BASIC SCHOOLS IN OGUN STATE, NIGERIA

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Abstract
Many teachers still struggle to teach reading skills and lack knowledge of different approaches to teach reading. The resultant effects are pupils who can't read, struggle to read, and lack motivation to learn. It is against this background that this study investigated the effect of Synthetic Multisensory Approach on the Reading Skills Development in Blending of Pupils in Lower Basic Schools in Ogun State, Nigeria. The study adopted a quasi-experimental research design. A total of 476 pupils, 10 teachers in the experimental group and 10 in the control group were involved in the study using multistage sampling procedure. The study examined the main effect of treatment, and gender on the lower basic pupils reading skills development in blending. Oral Blending Test (OBT), was used to collect data. Two hypotheses were formulated. The hypotheses formulated were quantitatively tested using Analysis of Covariance and at 0.05 level of significance. The major findings revealed that SMA-JPRB enhanced the reading skills development of pupils in Blending and that gender did not influence reading skills development in blending. The study recommended that the integration of SMA into the teaching of English Studies in lower basic schools and ultimately promoting improved reading.

Keywords: synthetic multisensory approach, Blending.

Introduction

Reading skills development is a critical aspect of a child's educational journey, and it lays the foundation for future academic success. Blending is an important component of reading skills development especially once the pupils are able to identify the different letter sounds. Blending is crucial as it involves the putting together of letter sounds to make words. Pupils who struggle with blending have difficulties decoding unfamiliar words and may have delays developing reading skills. Furthermore, blending is an essential reading skills development in lower basic school. Blending is gotten through phonemic awareness instruction. Pupils' ability to blend sounds to make words is fundamental to becoming proficient readers (National Reading Panel, 2000). For pupils to decode words, they must learn the letter sounds, and then blend the sounds to determine the word. The

study carried out by Adedeji and Odebiyi (2014) found that pupils in primary one had low levels of phonemic awareness and blending skills. While Maguire, Jones, Bowyer-Crane, and Snowling (2015) found that blending skills was a significant predictor of early reading ability in primary one pupils. Their study highlighted the importance of developing blending skills in early years. Ehri et al, (2010) on their part argued that the ability to blend sounds is necessary for pupils to decode unfamiliar words and develop fluency in reading. Conclusively, blending skill is a very important reading skills development component for pupils in lower basic school.

Despite the benefits of blending many pupils in lower basic schools struggle with developing blending skill. There is therefore a need for early intervention for pupils who may be at risk of reading difficulties due to their inability to blend. Snowling, Adams, Bishop, Stothard, & Hulme (2019) and Molfese et al. (2017) suggested that phonemic awareness and blending skills be taught in the early years. Several studies submitted that the best approach to teach blending skills was to use the Synthetic Multisensory Approach (Adedeji & Odebiyi, 2014; Adeyemo & Adeyemo, 2018; Troia, Shankland, and Wolbers, 2016).

Hence, this study on synthetic multisensory approach and the reading skills development in blending of pupils in lower basic schools explor**es** the effectiveness of a synthetic multisensory approach for improving pupils blending skills and supporting their overall reading development.

Synthetic Multisensory Approach (SMA) is a multisensory learning approach that uses a combination of visual, auditory, and kinesthetic/tactile stimuli to engage learners in the learning process. The Department for Education and Skills (DfES) (2004) cited by Jubran (2012) defines multi-sensory as: 'using visual, auditory and kinesthetic modalities, sometimes at the same time'. Kinesthetic refers to perceiving through touch and an awareness of body movements. The major benefit of using the **multisensory** approach of teaching is that it helps pupils to**retain** more knowledge thereby, enabling learners to have a full and rich understanding of their learning (Sopekan, 2014).

Synthetic Multisensory Approach is an alternative approach that integrates the use of multiple senses to teach phonemic awareness. This approach is based on the premise that pupils learn best when they are engaged in multisensory activities. Though Synthetic Multisensory Approach was first introduced by Grace Fernald in 1943 but was made popular by Maria Montessori (Inocian, 2018; Nakra, 2019). Synthetic multisensory approach engages pupils to learn through the sense of sight, touch, and movement, it can also involve the sense of taste and smell where necessary (Birsh,

2011, Omotuyole, 2019). The goal of synthetic multisensory approach is to help pupils become critical thinkers thereby improving memory and retention (Walker, 2017). The synthetic multisensory approach has been found to be effective for pupils with dyslexia but research on its effectiveness for pupils without dyslexia is limited (Berninger, Virginia & Nielsen, 2008). Several studies have investigated the effectiveness of the synthetic multisensory approach on blending skills among pupils in lower basic schools. Kuo and Anderson (2010) found that primary one pupils who received instruction using the synthetic multisensory approach showed significant improvement in their blending skills and phonemic awareness compared to those who received traditional instruction. Similarly, a study by Farokhbakht, and Nejadansari (2015), found that the synthetic multisensory approach was more effective than conventional method for improving phonemic awareness among pupils in first grade. Other studies have found that the effectiveness of the synthetic multisensory approach may vary for pupils with different learning styles or abilities. A study by Lloyd, Hertzog, and Wood, (2017) found that the synthetic multisensory approach was effective with pupils with reading difficulties, particularly those with dyslexia. While a study by Snowling et al (2019), argued that blending skills are a critical component of phonological awareness, which is essential for developing early reading skills. From the literature reviewed, reading skills development, particularly blending skill is important.

This study therefore adapted Jolly phonics and simple reading booklets as the synthetic multisensory approach for the study. Jolly Phonics is a child-centred synthetic multisensory phonics programme. It was first devised by Sue Lloyd, a primary-school teacher, in 1992 for primary use with UK children aged four to seven years. The programme uses multi-sensory approaches such as visuals, auditory, tactile and kinaesthetic (Lloyd, & Wernham, 2009). Jolly phonics teaches children to identify the 42 phonemes within the English language and their corresponding graphemes adapted to suit lower basic pupils learning environment in Nigeria. Pupils are taught to synthetize sounds together to read a word, known as 'blending' or 'decoding', and to spell words through segmenting the sounds known as 'encoding'. Furthermore, words with irregular or alternative spelling patterns and 'tricky words' (words which are non-decodable) are taught separately, sentence strips and age appropriate reading booklets are also introduced. Two theories were used to support the study. The sociocultural theory and the Visual Auditory and Kineasthetic (VAK) learning style theory.

The sociocultural theory highlights the importance of social interaction and collaboration in the learning process and provides a theoretical framework for understanding the potential benefits of synthetic multisensory approach for reading skills development in phonemic awareness by creating an environment for active participation and collaboration in the learning tasks. While the VAK learning style theory is applicable to this study because in VAK learning style a wide range of pupils are taken care of based on their learning styles. Also, it provides theoretical foundation for the study and supports the hypothesis that Synthetic multisensory approach can lead to enhanced blending skill.

Hence, this study will further investigate the effect SMA approach can have in improving reading skills development in blending of pupils in English as second language. Also, the present study is presumed to fill the lacuna in this regard. Consequently, it is expected that the SMA will turn out to yield promising results in Ogun State, Nigeria context as well.

It is on this basis that this study investigated the effect of the synthetic multisensory approach on the reading skills development in blending of the pupils in lower basic schools.

Many pupils in lower basic schools struggle with developing blending skill a foundational skill necessary for reading. Research has shown that pupils who lack this skill may be at the risk of developing reading difficulties as an outcome. This problem is worsen by limited access to educational resources and a general lack of understanding about the best approaches for improving blending among lower basic school pupils.

There is therefore the need to investigate the effectiveness of synthetic multisensory approach in enhancing the reading skills development in blending for pupils in lower basic schoo. The purpose of this study is to investigate the effectiveness of Synthetic Multisensory Approach (SMA) to enhance the reading skills development in blending of pupils in lower basic school. Specifically, the study sets out to; Examine the effect of SMA on the reading skills development in blending of pupils in lower basic schools; Ascertain the effectiveness of Synthetic Multisensory Approach on the reading skills development in blending of pupils' in lower basic schools based on gender.

Research Questions

The following research questions were raised which guided the study:

1. What is the effect of Synthetic Multisensory Approach on the reading skills development in blending of pupils' in lower basic schools?

2. What is the effect of Synthetic Multisensory Approach on the reading skills development in blending of pupils' in lower basic schools based on gender?

Research Hypotheses

The following null hypotheses were formulated and tested in the study.

H01: Synthetic Multisensory Approach does not have any significant main effect on the mean scores of pupils in lower basic schools reading skills development in blending.

Ho2 : There is no significant main effect of Synthetic Multisensory Approach on lower basic school pupils' reading skills development in blending based on gender.

Methodology

This study adopted the quasi-experimental pre-test, post-test 2x2 non-equivalent control group factorial design, where intact classes were subjected to SMA-JPARB (treatment) and the conventional group to English studies scheme (control). The multistage random sampling procedure was used. In the first stage, Ogun central senatorial district was selected randomly from the three senatorial district. While in the second stage the simple random sampling technique was used to select the two local governments involved, using pieces of paper with the list of local governments under Ogun Central Senatorial District written on it. Odeda and Abeokuta North Local government areas were selected. Finally, six public schools and four private schools were selected. From these schools, two intact classes involving the pupils and their class teachers were selected from the public/private primary school also using the simple random sampling technique (one experimental and one control). The pupils in the experimental group were taught using the Synthetic Multisensory Approach while those in the conventional group were taught using their scheme from Nigeria Research and Educational Council (NERDC). The teachers in the experimental group received training and materials for their pupils on using Synthetic Multisensory Approach to teach blending skills. While the teachers in the control group used the conventional rote method to teach their classes. The total number of pupils used for the study using intact classes were 368 pupils from public schools and 108 pupils from private schools using intact classes. After the selection a letter of authority to carry out the research was taken to the selected schools. The research assistants and the class teachers involved in the study were trained on the use of the teaching manual. They were trained on the adapted Jolly

phonics and reading booklets manuals. While those in the control group used the English studies scheme to continue to teach the pupils. Data was collected with the use of Oral blending Test (PAT). The test consisted of 20 words for blending. Each pupil was expected to sound out each letter correctly. A mark was given for each correctly blended word. Maximum score would be 20. The reliability of the instrument was determined using Cronbach Alpha and found to be 0.820. The test was also administered as a post- test for the two groups. The data collected were analysed quantitatively using Analysis of Covariance. All hypotheses were tested at 0.05 level of significance.

Results

Ho1: Synthetic Multisensory Approach does not have any significant main effect on the mean scores of pupils in lower basic schools reading skills development in blending.

Table 1

Analysis of Covariance on effect of treatment (Synthetic multisensory approach) on lower basic pupils' reading skills in blending

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	13444.546[a]	8	1680.568	101.172	.000	.634
Intercept	3934.455	1	3934.455	236.858	.000	.337
Pre-blending	3242.865	1	3242.865	195.224	.000	.295
Treatment	1551.702	1	1551.702	93.414	.000	.167
Error	7757.343	467	16.611			
Total	36483.000	476				
Corrected Total	66472.639	475				

a. R Squared = .634 (Adjusted R Squared = .628)

Dependent Variable: Post-Blending

A univariate analysis of covariance was conducted to determine the effect of Synthetic Multisensory Approach (SMA) on pupils' reading skill in blending. The pupils' reading score in blending before the treatment was used as covariate in the analysis. Table 4.13 shows that SMA had statistically significant main effect on the pupils reading skill in blending ($F_{(1, 467)} = 93.414$; $p<0.05$, partial eta squared = 0.167). The treatment effect size is 17% (partial eta squared x 100). This result means that SMA is potent for improving reading skill in blending. Thus, the null hypothesis 1b was rejected

giving option for the acceptance of the alternative hypothesis that there is significant main effect of treatment (Synthetic multisensory approach) on lower basic pupils' reading skills in blending. This result means that SMA is potent for improving reading skill in blending. Thus, the null hypothesis was rejected giving option for the acceptance of the alternative hypothesis that "Synthetic Multisensory Approach does have significant main effect on the mean scores of pupils in lower basic schools reading skills development in blending."

Ho2: There is no significant main effect of Synthetic Multisensory Approach on lower basic school pupils' reading skills development in blending based on gender.

Table **2:** Analysis of Covariance on effect of Synthetic Multisensory Approach on lower basic school pupils' reading skills development in blending based on gender.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	13444.546[a]	8	1680.568	101.172	.000	.634
Intercept	3934.455	1	3934.455	236.858	.000	.337
Pre_blending	3242.865	1	3242.865	195.224	.000	.295
Treatment	1551.702	1	1551.702	93.414	.000	.167
Gender	2.639	1	2.639	.159	.690	.000
Treatment * Gender	.417	1	.417	.025	.874	.000
Error	7757.343	467	16.611			
Total	36483.000	476				
Corrected Total	66472.639	475				

a. R Squared = .634 (Adjusted R Squared = .628)

Dependent Variable: Post-Blending

The univariate analysis of covariance shown in table 4.13 reveals the main effect that gender has on the pupils' reading skills in blending. Using the pupils' reading score in blending before the treatment as covariate in the analysis, the table reveals that there is no significant main effect of gender on lower basic pupils' reading skill in blending ($F_{(1, 467)} = 0.159$; $p>0.05$, partial eta squared = 0.000). The treatment effect size is 0% (partial eta squared x 100). This means that being female or male in the study did not exert any statistically significant effect on the pupils' post reading skill mean score in blending. Hence, the null hypothesis was accepted giving option for the rejection of alternative hypothesis that there is significant main effect of Synthetic Multisensory Approach on lower basic school pupils' reading skills development in blending based on gender.

Discussion of Findings

Outcome of the study showed that pupils exposed to the Synthetic Multisensory Approach performed significantly better than pupils exposed to the conventional method of blending hence, rejecting the null hypothesis one. However, hypothesis two was accepted because there was no significant gender difference in the post-test scores of the experimental group exposed to the Synthetic Multisensory Approach, implying that male and female participants exposed to SMA had similar experience in the programme which reflected in their performance. Although, a close look shows higher scores for females in blending than males. However, this was not significant enough to exert any statistically significant effect on the pupils' post reading skills development in blending hence, the null hypothesis was accepted.

Findings from this study shows that Synthetic Multisensory Approach is easier to understand and process due to phonemic awareness which is useful for improving blending skills. This is supported by Salfer (2006) who examined the efficacy of a multisensory reading programme on literacy improvement on kindergarten pupils in Ohio. Results showed that the intervention programme improved pupils' ability to identify lower case letters by pointing, naming lower case letters; correctly articulate the sounds of lower case letters, and blend the articulated letters to form words properly. The outcome of this study also conforms with the findings of Adedeji & Odebiyi, 2014; Adeyemo & Adeyemo, 2018; Troia, Shankland, and Wolbers, 2016. Maguire, Jones, Bowyer-Crane, and Snowling (2015) found that blending skills was a significant predictor of early reading ability in primary one pupils. Their study highlighted the importance of developing blending skills in early years. Moreover, Byrne, Fielding-Barnsley and Ashley (2010) confirmed that the Multisensory Jolly Phonics awareness (sound foundation) can improve first grade pupils' reading skill. Additionally, Ehri, Nunes and Willows (2011) asserted that young learners can develop their reading skills by connecting the sounds together which support the effect of Synthetic Multisensory Approach on the reading skill development of pupils in blending.

The data analyzed also shows that the multisensory approach used by the teachers in teaching initial reading had positive effect on the pupils as reflected in the enhanced post test scores of the pupils.

From the findings of the study, it can be concluded that pupils can achieve high reading rate if properly taught. The study clearly shows that for pupils to learn how to read they must be taught

using well prepared materials and strategies that can help them achieve the necessary level of reading required by the family and school.

This is what the Synthetic Multisensory Approach did. Pupils' learn through total involvement such as story-telling, learning letter sounds, make and combine letters to form words which eventually leads to proper reading.

Conclusion

Synthetic multisensory approach is effective in facilitating lower primary school pupils' reading skills development in blending.

The synthetic multisensory approach is not gender sensitive although a close look at the result reveals that there was a slight difference in the mean scores in favour of the female pupils, it can be concluded that the synthetic multisensory approach is not gender sensitive.

Recommendations

Based on the findings of this study, the following are recommended:

It is highly recommended that synthetic multisensory approach be used in the teaching and learning of blending skills for lower basic school pupils.

Early interventions is also crucial to preventing reading difficulties from developing later on. In addition, government at different levels need to invest more in the training of teachers on interventions such as those that use a synthetic multisensory approach to teach blending skills. Finally, parental involvement could be sought in assisting at home to reinforcing blending skills at home and also provide opportunities for reading practice.

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