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Teachers Perception of Students with Dysgraphia and Academic Performance in Nigeria

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ABSTRACT: *The study aims to investigate teachers' perception of students with dysgraphia and academic performance in secondary schools in Delta State. This study adopted the descriptive survey design. The population of this study include all the teachers in 245 secondary schools in three local government area of Delta state with a population of 4,750 teachers. The three local government areas are from the three senatorial districts of Delta state which are Osadenis High School, Asaba, (Delta North), Abraka Grammar School, Abraka (Delta Central) and St. Michaels College, Oleh (Delta South). The simple random sampling technique was used to select 25 secondary schools from where 350 (152 male and 198 female) secondary school teachers were also selected. Out of the 25 secondary schools, 17 are from the rural while 8 are the urban settings. 234 teachers are from the rural and 116 from urban settings. The instrument for this study was a researcher developed four-point Likert type scale instrument. The test-retest method was used to ascertain the reliability of the instrument and it has a Cronbach Alpha reliability index of 0.875. The One-Way Anova statistics method was used to test all research hypotheses at 0.05 level of significance. Results revealed that dysgraphia has significant influence on the academic performance of students with the learning disorder (dysgraphia). In addition, it was found that there is significant difference in the academic performance of students with dysgraphia based on sex. Based on these findings, it was recommended that Teachers should refer students to counsellors for therapeutic attention; teachers should adopt teaching approaches that will encourage hand writing development; Such students should be allowed to use assistive technology in writing among others.*

KEYWORDS: dysgraphia, academic performance, students, teachers' perception

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INTRODUCTION

Being a learner in any academic institution requires taking notes in class while teaching and learning activities are ongoing. Writing is important to every child in our school. Handwriting is an important means of communication that enables the expression, recording, and transmission of ideas by learners throughout their educational careers (Dennis & Swinth, as cited in Feizefu, 2021). Writing skill is directly related to most school activities, and according to Chang and Yu (2014), 30 to 60% of the school's daily period activities, motor tasks are performed, mainly consisting of handwriting activities/calligraphy. It is a sophisticated skill, used to the highest level of human communication, i.e., it plays the role of spreading culture and concepts of humanity (Planton et al, 2013). It is characterized as complex, because it simultaneously involves perceptuo-motor skills (planning and implementation of motor action), cognitive and linguistic processes, as such writing is a single context which refines language, literacy and motor skills (Bindman et al, 2014). Literature reports that good handwriting requires mainly fine motor control, visual-motor integration, motor planning, proprioception, visual perception, sustained attention and sensory awareness of the fingers, and alterations in one or more of these functions may cause impairments to the development of writing skills (Martins et al, 2013; Okuda et al, 2011).

Though handwriting enables the transmission of ideas, it is a complex skill that combines motor and linguistic components which is acquired over an extended period of time. Furthermore, handwriting is needed for many reasons that people might not readily recognize. Writing notes, recipes, prescriptions, messages, checks, and filling out applications are among a few reasons why the developing and teaching of handwriting skills needs to be continued in the schools and at homes. As written expression is emphasized in the education system, some children are unable to express themselves through writing due to some inability even though their cognitive abilities are non-impaired. A child who has difficulties expressing himself/herself in writing is said to have dysgraphia.

Dysgraphia comes from Greek origin. *Graph,* the base word, traces back to the involvement of the hand in writing and the formation of letters; *Dys,* the prefix, demonstrates an impairment; while *ia,* the suffix, defines a condition (*Understanding Dysgraphia*) (Brown, 2019). Disorder of written expression (dysgraphia) is defined as a combination of difficulties in an individual's ability to compose written text. Its characteristics include unreadable handwriting, letter shape distortions, diffluent writing, spelling errors and difficulty in written expression of ideas (Feizefu, 2021). According to Deuel (2001) dysgraphia is a learning disorder in which the individual's writing skills are below the level expected for his/her age and cognitive level. There are many ways by which dysgraphia may occur. It can be present in isolation or with other learning disorders like dyslexia and can often go undiagnosed. According to the DSM-5, dysgraphia is defined as a "specific learning disorder with impairment in written expression" (APA, 2013). This diagnosis requires the presence of a difficulty in relation to writing, persistently at least for six months, at minimum,

despite the intervention sessions. These difficulties may impair the individual, resulting into lower written performance than expected for the chronological age, difficulties in school performance or at work and daily life activities, possible to be confirmed by complete clinical evaluation and standardized performance measures. According to Nicolson and Fawcett (2011), dysgraphia constitutes a written expression disorder, which results into writing skills lower than expected for the age, related to legibility letter training quality, alignment and spacing of letters and words, dimensioning of letters and low speed (production rate).

Dysgraphia, a learning difficulty concerning handwriting and subsequent letter formation, does not directly reflect the student's level of aptness or capacity for intelligence (Hendrickx, 2009). Dysgraphia, primarily assumed to be a disorder involving difficulties with motor coordination, can also present itself as problems with letter order and flow, such as in the context of letter formation and pattern (Hendrickx, 2009). Dysgraphia is often accompanied by several learning disabilities, but it is unclear whether they share underlying neurological causes. According to Kooij and Sandra, (2013), these associated, or comorbid, disabilities include:

a. *Dyslexia:* A reading disorder characterized by trouble with reading irrespective of normal intelligence.
b. *Attention Deficit Hyperactivity Disorders*: Characterized by problems paying attention, excessive activity or taking action without fore-thought. Dysgraphia and ADHD commonly occur together.
c. *Auditory Processing Disorder*: A listening disability that affects the to process auditory information. This can lead to problem with auditory memory and auditory sequencing. Many people with dysgraphia have auditory processing problem and may develop their own logographic cues to compensate for this type of deficit. Auditory processing skills could be the primary shortfall in Dysgraphia.
d. *Developmental Coordination Disorder*: A neurological condition characterized by marked difficulty in carrying out routine tasks involving balance, fine-motor control, kinesthetic coordination, difficulty in the use of speech sounds, problems with short-term memory and organization.

From the study of Nkomo (2020) which sought to investigate the prevalence of learning disorders among undergraduate students in Faculty of Education in Cross River University of Technology, Calabar, the descriptive survey design was adopted. The data for this study were collected from a random sample of 240 students of year one to four in the Faculty of Education, Cross River University of technology, Calabar, Nigeria. There were 112 (46.7%) from the Department of Curriculum and Instructional Technology and 128 (53.3%) from the Department of Educational Foundations and Administration; by gender, 125 (52.1%) were males and 115 (47.9%) females. Data collection instrument was a structured questionnaire titled 'Learning Disorder Questionnaire (LDQ)". The data obtained were analysed using frequency counts, percentages, descriptive statistics Pearson product moment correlation and analysis of variance for repeated treatments,

while independent t-test and f-ratio tests were used to test for significance. Results revealed that ADHD correlated significantly with dysgraphia (r=.389, p=.000), and Dysgraphia correlated significantly with dyslexia (r=.475, p=.000).

Dysgraphia, a learning disability, can manifest at any level, including slow rate of writing, difficulty spelling, and problems of syntax and composition (Graham et al, 2000). Writing is an important and complex task that typically develops in early childhood. As a result of this, when a child starts developing writing problems, signs known as dysgraphia set in. Although the diagnosis and management of dysgraphia usually occurs in an educational setting, the teacher plays an important role in guidance and evaluation.It was stated that writing disorders decreased as the age of the learner increases. It was estimated that in the beginning of the second grade, 37% of learners had a form of dysgraphia which decreased to 17% at the end of the year and this further decreased as the learners progressed to their third grade and on (Feizefu, 2021). According to Reynold as cited in Feizefu, (2021), prevalence of dysgraphia is estimated at 5-20% of students having some type of writing deficit. According to Planton et al, (2013) 10 to 30% of the children have difficulty in developing calligraphy properly, which may cause an academic and psychosocial impact, interfering with personal relationships and self-esteem, and also predictive of learning difficulties. Globally some 30-40% of learners experience handwriting problems (Mercer et al, 2011).

A poorly developed handwriting impacts a learner in multiple ways. First and foremost, it negatively impacts on self-esteem and worthiness of a learner (Bamidele, 2017). Second, it affects the physical behaviour like lessons attendance, sitting position in the class, completion and submission of the assignment and planning strategies of learners (Limpo et al, 2018). This can lead to stigma of the learner. Most people, the child with dysgraphia inclusive, experience stigma at one point or the other or in one setting or another (Izuchi & Agamugoro, 2021). Finally, it impacts on the overall academic performance of an individual learner, through both quality and quantity of persuasive and cognitive writing (Santangelo & Graham, 2016 as cited in Mulanya, 2020). From the study of Uche (2014) on the role of handwriting in mathematics performance in North Central Nigeria, the Exploratory research design was adopted. 315 respondents were randomly selected to isolate factors influencing scores in a mathematics test. From the result, a high correlation between handwriting quality and scores in a math test was found. From the study of Nkomo (2020) which sought to investigate the prevalence of learning disorders among undergraduate students in Faculty of Education in Cross River University of Technology, Calabar, the descriptive survey design was adopted. The data for this study were collected from a random sample of 240 students of year one to four in the Faculty of Education, Cross River University of Technology, Calabar, Nigeria. There were 112 (46.7%) from the Department of Curriculum and Instructional technology and 128 (53.3%) from the Department of Educational Foundations and Administration. by gender, 125 (52.1%) were males and 115 (47.9%) females. Data collection instrument was a structured questionnaire titled ‘Learning Disorder Questionnaire (LDQ)”. The data obtained were analysed using frequency counts, percentages, descriptive statistics Pearson product moment correlation and analysis of variance for repeated treatments, while independent t-

test and f-ratio tests were used to test for significance. Results revealed that significant gender difference exist for dysgraphia (t=2.819, p=.005<.05). The result showed that male undergraduate students in Faculty of Education of Cross River University of Technology have more problems with writing skills than the female as revealed from the mean value of 58.43 for male and 54.79 for female undergraduate students.

Martins et al, (2013), on Screening for motor dysgraphia in public schools, the study aims to screen for warning signs of dysgraphia in schoolchildren at the sixth grade of elementary school. This was a descriptive, exploratory, cross-sectional cohort study performed with 630 school-children (Of these, 289 were females and 341 males) assessed through the (adapted) Analytical Dysgraphia Inventory, which recognizes difficulties in writing through the tracing of graphics. Analysis of variance (ANOVA) was used for the statistical analysis of the obtained results, with a significance level of 0.05. Results revealed that males showed more indicators suggestive of dysgraphia than their female counterpart (illegible handwriting: female=35.2%, male=64.7%; Angulation: Female= 42%, male = 58%; ascending and descending/fluctuation lines: Females= 47%, male=53%; abnormal letters: Female=36%, male=64% and touched up letters: female=38%, male=62%).

Statement of the Problem

Writing is a tool that is absolutely imperative for other subjects and everyday use. The handwriting of most pupils poses a lot of problems to the teachers who mark and correct their books and notes as well as examination scripts. Most of the students fail both public and class examinations not because they are not knowledgeable, but because they present the material in bad or poor handwriting which makes it difficult for the markers to see and understand what they have written. Impliedly, they are intelligent, unfortunately, many pupils fail in secondary schools today because of their handwriting which in the long run affect their academic performance. In addition, it makes the teaching and learning process difficult which stands as a challenge to the teacher. These writing problems affect both the teachers and the learners in the educational sphere in one way or the other. Many children with dysgraphia are not able to keep up with written assignments, cannot put coherent thoughts together on paper, or write legibly. Hence, this disability needs to be recognized and remediated before it creates long lasting negative consequences for the child. Some Teachers are not aware of the signs and symptoms of dysgraphia which even makes the case worse. The problem sets in when diagnosis is difficult. Hence the problem of this study is "what is teachers' perception of students with dysgraphia's academic performance?

Research Questions

The study seeks to answer the following research questions.

1. To what extent does dysgraphia affect academic performance of secondary school students with dysgraphia?
2. Is there any difference in the academic performance of secondary school students with dysgraphia based on sex?

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Hypotheses

The following hypotheses are formulated to guide the study and will be tested at 0.05 level of significance.

a. Dysgraphia does not influence academic performance of secondary school students with dysgraphia

b. There is no significant difference in academic performance of secondary school students with dysgraphia based on Sex.

METHODOLOGY

This study adopted the descriptive survey design. The population of this study include all the teachers in 245 secondary schools in three local government area of Delta state with a population of 4,750 teachers. The three local government areas are from the three senatorial districts of Delta state which are Osadenis High School, Asaba, (Delta North), Abraka Grammar School, Abraka (Delta Central) and St. Michaels College, Oleh (Delta South). The simple random sampling technique was used to select 25 secondary schools from where 350 (152 male and 198 female) secondary school teachers were also selected. Out of the 25 secondary schools, 17 are from the rural while 8 are the urban settings. 234 teachers are from the rural and 116 from urban settings. The instrument for this study was a researcher developed four-point Likert type scale instrument. The test-retest method was used ascertain the reliability of the instrument and it has a Cronbach Alpha reliability index of 0.875. The One-Way Anova statistics method was used to test all research hypotheses at 0.05 level of significance.

Presentation of Results

All research questions were hypothesized and were analysed as presented below.

Hypothesis 1: Dysgraphia does not significantly influence academic performance of secondary school students with dysgraphia.

Table 1: One-Way Analysis of Variance of Teachers Perception of the Influence of Dysgraphia on Academic Performance of Secondary School Students with Dysgraphia

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.201	2	174.246	3.30	.004
Within Groups	30.067	148	194.370		
Total	30.268	150			

**P≤.05 Level of Significance, Dependent Variable: Academic Performance, Predictor: Dysgraphia*

Table 1 above, presents the Analysis of Variance of teachers' perception of academic performance of students with dysgraphia. From the results, it shows the f-value =3.30, and p=< 0.004. From the result, it shows that the p-value is less than the alpha level of 0.05 level of significance. This connotes that dysgraphia has significant influence on the academic performance of students with the learning disorder. As such the null hypothesis which states that dysgraphia does not significantly influence academic performance of secondary school students with dysgraphia, is rejected. This implies that dysgraphia has significant influence on the academic performance of students with the learning disorder (dysgraphia) as seen by teachers.

Hypothesis Two: There is no significant difference in academic performance of secondary school students with dysgraphia based on Sex

Table 2: One-Way Analysis of Variance of Teachers' Perception of Difference of Academic Performance of Students with Dysgraphia based on Sex

ANOVA							
	Mean Male	Female	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	71.69	68.98	.105	2	.052	3.82	.078
Within Groups			38.588	148	.263		
Total			38.693	150			

**P≤ .05 Level of Significance, Criterion Variable: Academic Performance, Predictor: Sex*

As presented in table 2 above, the Analysis of Variance of teachers' perception of the difference of academic performance of students with dysgraphia based on sex. From the analysis, the mean values for female=68.98 and male=71.69, f-value =3.82, and p=< 0.078. From the result, it shows that the p-value is greater than the alpha level of 0.05 level of significance. This connotes that there is significant difference in the academic performance of students with dysgraphia based on sex. As such the null hypothesis which states that 'there is no significance difference in academic performance of secondary school students with dysgraphia based on Sex' is rejected. From the mean values, it can be seen that male secondary school students with dysgraphia are affected more than their female counterpart as revealed by teachers in secondary schools.

DISCUSSION

Data collected on teachers' perception of students with dysgraphia and academic performance, revealed testing hypothesis one, that dysgraphia has significant influence on the academic performance of students with the learning disorder (dysgraphia). This is because, there is no way an individual having learning disorder like dysgraphia that has to do with the presentation of materials in written form will be expected to perform well. When teachers find it difficult to read written presentation, it will be difficult to understand written materials that will attract necessary

scores. This is in line with the findings of Uche (2014) who found a high correlation between handwriting quality and scores in a mathematics; and Santangelo and Graham, as cited in Mulanya, (2020) who noted that dysgraphia impacts on the overall academic performance of an individual learner, through both quality and quantity of persuasive and cognitive writing.

In response to hypothesis two, it was found that there is significant difference in the academic performance of students with dysgraphia based on sex. In addition, it also revealed that male secondary school students with dysgraphia are affected more than their female counterpart as revealed by teachers in the secondary schools. This is because females make more effort and take more time in trying to write legible than their male counterparts who are interested in finishing a task on time. This study supports the findings of Nkomo (2020) which found that male undergraduate students in the Faculty of Education of Cross River University of Technology have more problems with writing skills than the female. In addition to the above, Martins et al, (2013) also found that dysgraphia is more prevalent among male learners than female learners.

CONCLUSION

In conclusion, the study reveals that the learning disorder has significant influence on the academic performances of students with dysgraphia. It was also revealed that dysgraphia is but a condition of learning disability and not a disease. Even though it has no cure, effective management can reduce the impact on children as they grow. It was also revealed that dysgraphia is closely linked to gender like, dysgraphia favouring females than males. From the literature reviewed, it was noted that dysgraphia can co-exist with other learning disabilities like dyslexia. Therefore, for effective management of the disorder/disability (dysgraphia), the teachers must try and understand the co-existing learning disabilities in order to enhance the academic performance of the students.

Recommendations

Based on the findings of this study, the following recommendations are hereby made:

1. Teachers should refer students to counsellors for therapeutic attention
2. Teachers should adopt teaching approaches that will encourage hand writing development
3. Such students should be allowed to use assistive technology in writing
4. Teachers should teach sequentially, basic skills of writing, and reading.
5. Guidance counsellors should organise seminars on hand writing development for students.

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