

Influence of Teachers' Variables on Utilization of Instructional Accommodations in Teaching Learners with Dysgraphia in Cross River State

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Abstract

Instructional accommodations has become a global best practices in education of children with special needs inclusive of those with dysgraphia also known as handwriting disabilities . This is to ensuring that all children are given equitable access to quality education and participate in all learning activities and unlock the general curriculum as well reduce potential effect of disability. However, competence on utilizing instructional accommodations in the classroom varies among teachers. Few studies have considered the moderating effects of some teachers' variables in instructional accommodation. This study investigated influence of teachers' level of knowledge and specialized training on the utilization of instructional accommodation for children with dysgraphia in special schools in Cross River State. A quantitative research method and Ex-post facto design was adopted, 119 teachers in the special schools were purposively sampled and well validated questionnaire with 60 items and likert response scale was used as instruments for data collection. Independent t-test with help SPSS software was used to analyze the data. Findings from the research indicated that teachers' variables been studied have significant role to play in the utilization of instructional accommodations in teaching learners with dysgraphia. Formal education of learners with this disability depends on the quality of teachers, instruction among other variables. This ought to be given priority especially when dealing with learners with special needs like dysgraphia which is vehemently neglected in the school system in Nigeria perhaps due to paucity of research in the area. Therefore, teachers' knowledge and specialized training is validated in this study as key factors to effective application of various accommodations for dysgraphics in schools in Cross River, Nigeria.

Keywords: teachers' variables, instructional accommodation, utilization, dysgraphia

Introduction

A typical Nigerian classroom has learners with varied abilities and disabilities. Among those with disabilities are students with dysgraphia. Dysgraphia is a disorder of writing ability at any stage, including problems with letter formation/legibility, letter spacing, spelling, fine motor coordination, rate of writing, grammar, and composition. It may occur in isolation but is also co-exist with dyslexia as well as other learning disorders. Depending on the definitions adopted, at least 30% to 47% of children with handwriting problems also have

reading problems (Hoorn, Maathuis, & Hadders-Algra, 2013). It can also be seen as a severe and extremely difficulties to write or express idea in writing, this may include activities such as filling forms, class work, homework, examination, and test or even writing personal information to a friend. In DSM-IV, difficulty in handwriting is categorized under many other neurodevelopmental disorders, such as attention-deficit/hyperactivity disorder, cerebral palsy, and autism spectrum disorder. Research demonstrates that 90–98% of children with these disorders have handwriting problems. This is due to lack of ability to integrate auditory, visual, motor and spatial skills require for writing among other factors (Valenta, 2006; and VESID, 2006).

As a result of these difficulties, school assignments and class work of learners with dysgraphia are most often left incomplete. At times learners are asked to recopy which is always not be better, dysgraphics have messy handwriting, remember less, the mechanics of writing interfering with learning, have poor grip on pen or pencil, irregular use of lines, space and exert undue energy/time on any written activity. These learners perform poorly on any written assessment, teachers, friends, peers and parents frowns at their best attempts. Dysgraphics find it very difficult to produce neat, legible work and express their thoughts in writing (Jones, 2009; and Hoorn, Maathuis, & Hadders-Algra, 2013). Learners with this disability approach any task that involves writing with tension and fear. These result in emotional issues like stress, anxiety, low self-concept, failure, frustrations, learned helplessness and eventual withdrawal from school because of inability to progress alongside peers in the same curriculum. Davis (2015) and Dcempt (2010) indicate that ratio of these students who find it difficult to cope with dysgraphia in schools is 5:4. According to Obani (2006), incidence of this disability like other types of learning disabilities is estimated to be between 15-30% in every school. Again, Graham, & Harris (2020), also report approximately that, 10-30% of children have difficulty mastering the skill of writing. What this means is that, in five children in classroom four have difficulty writing with hand, pen/pencil and paper just as 15-30% of these group are or will be present in schools if professional identification and assessment is conducted.

Most worrisome is the fact that almost every activity in school is handwriting driven. Studies have found that elementary students spend 30-60% of the school day engaged in reading, writing, and other tasks requiring the skill. Ability to write legibly with hand in school is critical and determined the extent to which individual can succeed has been re-echoed. The use of hand is critical to daily life functions, including writing in school, filling of form, cheque, dressing, and playing. An observation of 20 kindergarten in a classrooms indicates that kindergarten students spent almost one-half (46%) of the day engaged in writng task which require fine motor skills (Marri, Cermaky, & Cohnnie, 2019). Precursor skills for handwriting include; good fine motor skills, good visual-motor skills, proper pencil grasp, ability to trace lines/shapes accurately. Others are, ability to draw prewriting shapes and lines, good pencil control on a straight lines, well defined strokes, multi-directional coloring, good

coloring movement, ability to make different writing strokes for letters, and Self-care independence. Although research has shown that 30-60% of the class time is spent on fine motor/writing activities pupils still have difficulty producing legible handwriting because these precursor skills are lacking.

Despite the challenge and frustration of dysgraphia, US Department of Education (2004) and United Nations Organization (2006), confirms that dysgraphics have rights to equal and quality education to the extent of their ability. Also, New Brunswick Department of Education and Early Childhood Development (2015), National Center for Learning disabilities (2006), and National Center for Learning Disabilities (2014) report that students with specific learning disabilities including those with dysgraphia who access instructional accommodation services participate actively in every instructional activity and even perform better in written assessment tasks. This research evidence two major implications, first, learners with disabilities need instructional accommodations and secondly, those teaching learners with dysgraphia should be able use it professionally to reduce the effect of the disability on the students and learning process.

Generally, instructional accommodations are means of giving every child equal chance to actively participate and benefit from all instructional activities in the school. Bureau of Exceptional Education and Academic Content Standard (2006), sees it as one of the means of meeting individual student needs and ensure equal access to academic content standards. Also, Florida Department of Education (2010), defines accommodations as changes that can be made in the way students access information and demonstrate performance. In a more explicit way, accommodations are special needs education practice are alterations, changes or modifications in convention ways of instructional delivery to students with disabilities. These alterations or alternative procedures do not translate to lowering the standard of the curriculum, criteria and value of instruction and assessment. According to Luke & Schwartz (2007), accommodations involve the use of different strategies, assistive technology, changes in the schedule or environment, or support from a person to reduce effect of disability on learners and increase, maintain, or improve the performance of learners with disabilities in inclusive of dysgraphics.

Basic literacy on Accommodations are, the phases, categories, principles among others. Accommodations can be during instruction and assessment, in presentation (deals with how students access instruction/information) response (concern with how students w demonstrate competence and mastery of content), setting (has to do with where students are instructed and assessed), and scheduling (when the student will be instructed and assessed including timing). Professionally, the success or result of accommodations is determine by how it is used therefore, it must fellow some principle such as, the student disability profile, recommendations of the Individual Education Plan (IEP) team, assessed need(s) of the child, periodic evaluation, sused within prevailing legislative / policy frame work and student consent (National Center on Universal Design for Learning, 2009).

For learners with dysgraphia specifically, examples of common accommodations with less complex procedures include among others, note taking assistance, oral presentations or response, word processor, word predictions software, voice recorder, portable note taking device, finger spacers, pen/pencil grips, specialized writing papers, adapted pen/pencil with recommended diameter and height, paper stabilizer, and sitting posture support. These types of accommodations suit all learners because it has no digital divide implications, learners/users friendly, does not solely depend on electricity, less complex and can be used even in rural schools. Research evidence in Orim, (2018) indicate that these accommodations (pen/pencil grips, finger spacers, voice recorders and paper stabilizer) were used with dysgraphics within the ages of 9-15 years during instruction and improved level of participation in class room was recorded, particularly, learners had complete notes in 8 out of 10 subjects examined. This confirms widely held position that accommodations enhance learners' activeness in instructional process and boost psychological dispositions necessary for academic achievements. It is important to state that the essence of accommodations is to increase the level of students participation in all school activities and improve proficiency of students within one seamless, efficient instructional system. When this is not the focus of accommodations, it becomes modification while primarily reduces and lowers the standards of curriculum and assessment.

Chung, Patel and Nizami (2020) reveals that 60-75% of teachers lack knowledge on instructional accommodations and do not utilize accommodations in teaching and assessment to increase participation of students in class and improve their level of mastery in specific content area. Although Chung, Patel and Nizami did not specify the population and sample size of the teachers used, it can be interpreted that only 40-35% of teachers have basic literacy about accommodations. This percentage is insignificant compared to the increasing number of learners with handwriting disability when viewed from Obani (2006) proposition that, there is no Nigerian classroom without learners with specific learning disabilities. The author equally revealed that most children with dysgraphia are identified, no remediation and resources due to gross misconceptions and lack of research on the disability.

Research Hypotheses

The following two null hypotheses are formulated to direct this study.

- i. There is no significant difference between teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations in teaching learners with dysgraphia.
- ii. There is no significant difference between teachers with and without specialized training in their utilization of instructional accommodations in teaching learners with dysgraphia.

Methodology

The study adopted quantitative research approach and Ex-post facto design, 119 participants were purposively sampled from 169 teachers, principals and head teachers of special schools in Cross River State, 111 participants were teachers and eight head teachers and principals. A 60 item questionnaire with five points response scale tagged “Questionnaire on teachers’ utilization of instructional accommodations” (QTUIA) was developed by the researchers vetted by experts in handwriting disability, educational measurement and used for data collection. To ensure reliability, Cronbach Alpha method was used to determine the reliability score of 0.88 and a pilot study was also conducted to as part instrument validation process. Independent t-test with the help of SPSS software was used to analyze the data. These instruments were administered personally however, some participants preferred soft copies and they were obliged and requested to promptly return the instruments. The consent of participants was formally sought for and obtained.

Results

Null Hypothesis 1 There is no significant difference between teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations in teaching learners with dysgraphia.

The two categories of participants compared were teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations in teaching learners with dysgraphia. In order to test this hypothesis, data from the Statistical Package for Social Sciences (SPSS) were subjected to statistical analysis, using independent samples t-test. The result of the analysis was presented in Table 1

Table 1: Independent samples t-test of mean difference in teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations in teaching learners with dysgraphia (N=119)

Variable		n	%	\bar{X}	SD	Sig	df	t-value	Sig(2-tailed)
Teachers’ knowledge	Teachers with lower knowledge	66	59.5	35.19	5.29	0.61	117	0.63	0.005
	Teachers with higher knowledge	45	40.5	24.23	4.26				

P>0.05 df=109; Size effect 0.022

The Table 1 shows that the comparison of teachers with higher knowledge has a mean of 24.23 and SD of 4. 26 and those with lower knowledge having mean of 35.19 and SD of

5.29 produced a sig (2-tailed) 0.005 at df of 117 with effect size of 0.022 (the magnitude and the strength of difference between variables) shows that there was a significant mean difference in teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations in teaching learners with dysgraphia seeing that the sig (2-tailed) of 0.005 was less than alpha value of 0.05. Therefore, the null hypothesis was rejected. This indicates that teachers' knowledge plays a key role in utilization of instructional accommodations in teaching learners with dysgraphia.

Null Hypothesis 2: There is no significant difference between teachers with and without specialized training in their utilization of instructional accommodations in teaching learners dysgraphia.

The two categories of participants compared were teachers with and without specialized training in their utilization of instructional accommodations in teaching learners dysgraphia. To test this hypothesis, data from the Statistical Package for Social Sciences (SPSS) were subjected to statistical analysis, using independent samples t-test. The result of the analysis was presented in Table 2

Table 2: Independent samples t-test of mean difference in teachers with and without specialized training in their utilization of instructional accommodations in teaching learners dysgraphia ($N=119$)

Variable		n	%	Mean	SD	Sig	df	t-value	Sig(2-tailed)
Specialized training	Teachers with specialized training	17	15.3	9.21	3.03				
	Teachers without specialized training	94	84.6	41.11	8.55	0.47	117	0.73	0.002

$P > 0.05$ $df = 109$; Size effect 0.0501

The Table 2 shows that the comparison of teachers with specialized training in utilization of instructional accommodations in teaching learners dysgraphia has a mean of 9.21 and SD of 3.03 and those without specialized training had a mean of 41.11 and SD of 8.55 produced a sig (2-tailed) 0.002 at df of 117 with effect size of 0.0501 (the magnitude and the strength of difference between variables) shows that there was a significant mean difference in teachers with and without specialized training in their utilization of instructional accommodations in teaching learners dysgraphia seeing that the sig (2-tailed) of 0.005 was less than the p-value of 0.05. Therefore, the null hypothesis was rejected. This reveals that specialized training in

handwriting disability and other relevant areas is key to teachers' competence and will in the utilization of instructional accommodations in teaching learners dysgraphia.

Discussion of findings

The study was guided by two hypotheses and for the purpose of clarity to all categories of readers; the discussion was done on hypothesis basis.

Difference between teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations

The findings from the analysis and testing the hypothesis one indicates that teachers' knowledge plays a vital and cardinal role in application accommodations for learners with dysgraphia. The finding of this present study is congruent with Ajuwon, (2012), VESID (2006) and National Center for Learning Disabilities (2014) whose research into teachers' knowledge and use of instructional accommodations had shown that there is link between these variables. Most importantly, finding of the present study is supported by Elliott and Thurlow (2000) and Bowser, Korsten, and Zabala (2004) who opined that knowledge of instructional accommodations particularly on how to select reasonable accommodations that meets varied instructional and other needs learners is indispensable among teachers and other stakeholders in education of learners with the disability.

The SETT model that research has validated and is being recommended frequently depends on teachers' sound knowledge of the student (s), the environment, tools, and the task as part of criteria for selection of accommodations for learners. Confirming result of the present study Lere (2009), Campell (2016) and Nosagi (2015) studies posited that conceptual and professional knowledge on instructional accommodations is the core foundation of inclusive instructional practices as it helps teachers to remove barriers to active and meaningful participation of every learner in all teaching-learning process as well as equalize access to quality education by implementing the curriculum for all learners. Additionally, Kamula, and Ramanesh, (2013), and Wright (2016) periodic evaluation of instructional accommodations in line learners needs as well as their zone of proximal development is needful for effective utilization in pedagogical practice.

Result further indicates that more principals than head teachers know common and frequently used accommodations like use of computer, scribe, and audio format of learning materials, use of smart phones however, lack understanding of professional procedures to follow. This is call for concern and caveat because unprofessional use of instructional accommodations results to watering down instructional process, curriculum standard and assessment procedures. This will also produce unreliable performance of the learner which is against the principles and policy of accommodations for personal with disabilities. The concern and relevance of professional knowledge and procedure insuccessful utilization of accommodations in education of learners with dysgraphia is re-emphasized thus:

The use instructional accommodations as policy or procedure is good for the children with disability because it will help them overcome some challenges impose by disability but government has not fully provided training that is needed. In terms of procedures few are getting it right but it better for all stakeholders particularly principal as they provide both policy direction and instructional guidance in the school. Among head teachers, it was observed that there is seemingly lack of knowledge about the instructional accommodations and it professional procedures, we have written a comunique from our conference to ministry of Education to train head of schools on how to handle accommodations policy because teachers come to us regularly with some questions on some aspect they don't understand (Orim, 2018, p. 31-33).

An insight into the the result seems to indicate a trend where principals are better informed about the subject matter than head teachers. This may be attributed to differences in terms of educational qualifications, level of awareness, and training between principals and head teachers. Thus, it is obvious from the above that they appreciate the concept and this disability but more still need to be done by government and other key stakeholders in education of learners with special needs. The implications on the learners with the disability is that the effect of the disability is not reduced at primary level as there is not proper understanding of instructional accommodations. Further more, instructional process at this level is not inclusive because disability limits the level of participation of the children. This neglect the principle of equity and human right which provided for in the Covention of Right of Persons with Disabilities, 2006 and Discrimination against Persons with Disabilities (Prohibition Act),2018. It could also be infere that, poor learning outcome of most learners with disabilities is due poor knowledge of instructional accommodations among head teachers who suprintend over instructional delivery in primary schools.

Difference between teachers with and without specialized training in their utilization of instructional accommodations in teaching learners with dysgraphia

The findings from the analysis and testing of the null hypothesis revealed that specialized training in relevant areas for teachers is necessary as it effectively enhance their ability to use instructional accommodations. This finding is in line with Gray (2017), Ruzena (2005) and William-Mary Training and Technical Assistance Center (2008) who studies endorsed specialized training in professional areas like assessment and diagnosis, educational strategies, ICT and application of didactics materials among others that facilitates teaching-learning process. Professional training in specific learning disabilities with specialization in hand writing disability is core to understanding the disability, dynamics and mechanism of the process and the science of hand writing. This training is critical and necessary as the 3ps in hand writing, letter formation and spatial variables are professionally taught by experts. Also supporting this present study, Georgia Department of Education (2010) opined that training teachers in area like assistive technology based instructional accommodations has become not just requirement for graduation but condition for practical competence in the use

of accommodations by teachers. This is because of the complexity of technology based accommodations and modern classrooms are technology driven.

Findings also revealed that principals and head teachers need specialized training to provide good leadership and implement the policy of instructional accommodations in best interest of the learners and the school. It is affirmed that training is every important, this means that head teachers should support and encourage teachers to enroll for part time studies to update their knowledge on current trends in education of persons with disabilities to improve productivity and global competitiveness. The concern about this is that, most teachers at this level of education have low self-concept and aspirations especially those in the rural schools, unfortunately, majority of persons with disabilities inclusive dysgraphics are in rural communities and schools. Migration strategies for this could be among others, continuous counselling and improved conditions of service for primary school teachers who are at the mercy of Local Government Chairmen and their political god-fathers. This has negative implications on education of persons with special needs and primary education generally.

Conclusion

Quality formal education depends on the quality of teachers, instruction among other variables. This ought to be given priority especially when dealing with learners with special needs like dysgraphia which is vehemently neglected in the school system in Nigeria perhaps due to paucity of research in the area. Consequently, frustration, psychological trauma, and poor learning outcome stir glaringly on learners with this disability hence research and innovation driven by the philosophy of inclusionary practice become imperative. These were all learners in schools including dysgraphics will be fundamentally seen and treated the same particularly in instructional presentation primarily to enhance access and widen opportunity for all to maximize their potentials.

Recommendations

The study recommended that:

1. Current conceptual and professional knowledge of instructional accommodations should be made a key to equity and access to education for learners with dysgraphia,
2. Specialized training on the special need condition and technology based accommodations is imperative for teachers in education of learners with dysgraphia,
3. Modern classroom are inclusive hence instructional accommodations should become part of teaching-learning process,
4. Teachers professionally retraining is vital for successful utilization of instructional accommodations.
5. Without the aforementioned concept or policy of instruction accommodations will be adequately abused in schools.

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