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ORIM, SAMUEL ORIM

**TEACHERS' UTILIZATION OF INSTRUCTIONAL ACCOMMODATIONS IN
TEACHING LEARNERS' WITH DYSGRAPHIA IN CROSS RIVER
AND AKWA-IBOM STATE**

BY

ORIM, SAMUEL ORIM (N.C.E, B.Ed UNICAL & M.Ed UNIJOS)

A

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SUPERVISOR: Associate Prof. PhDr. VOJTEC REGEC, Ph.D.

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CERTIFICATION

This is to certify that this dissertation titled, **Teachers' utilization of instructional accommodations in teaching learners with dygraphia in Cross River and Akwo-Ibom State** was carried out by Orim Samuel Orim under my supervision.

Name of Supervisor: PhDr. Voject Regec PhD

Signature:-----

Date:-----

DEDICATION

This dissertation is dedicated to my wife, Mrs Orim, Deborah Bulabari and children, Ephraim O. Orim-Asi, Treasure L. Orim-Asi and Providence O. Orim-Asi who bore the pains of my absence during the studies.

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ABSTRACT

Dysgraphia as one of the special needs conditions impact negatively on the psycho-social and educational fortune of individuals with the disability especially learners in the school system. Despite this, global legislation and policy mandate stakeholders to provide equal right and access to quality education. To achieve this, international best practice or strategy like reasonable accommodations has become a common feature in education of learners with dysgraphia. Thus, this research focused on teachers' utilization of instructional accommodations in teaching learners with dysgraphia in Cross River and Akwa-Ibom state, Nigeria. The research primarily investigated the influence of teachers' teaching experience among other related variables on the use of instructional accommodations in classroom; it was guided by five hypotheses formulated by the researcher. It adapted a quantitative research approach and ex-post facto design with 119 participants purposively sampled from 169 teachers, principals and head teachers in six special schools in the states, 111 of the participants were teachers who responded to questionnaire and eight were head teachers and principals who took part in the interview. A 60 item questionnaire with five points response scale tagged Questionnaire on teachers' utilization of instructional accommodations (QTUIA) and Questionnaire for evaluation of teachers competence on instruction accommodations for learners with dysgraphia (QETCIALD) was developed by the researcher, vetted by experts in dysgraphia, educational measurement and interview were used as instruments for data collection. To ensure validity and reliability Cronbach Alpha method was used to determine the reliability scores which was between 0.79-0.88 and a pilot study was also conducted to trial test the instruments. Data from the field were analyzed using chi square test of two by three contingency table and independent t test with the help of SPSS software, and all the hypotheses were tested at .05 level of significance. Findings from the research as indicated in hypotheses one and three revealed that teachers' teaching experience and participation in conferences/ workshops in special education does not significantly influence their ability to use instructional accommodations in education of learners with dysgraphia while results for hypotheses two, four and five has shown that teachers' competence, specialized training, and attitudes of teachers are significant and critical variables that determine the use of reasonable instructional accommodations in education of these learners in Cross River and Akwa-Ibom state, Nigeria. Based on these findings the researcher recommended among many others that stakeholders particularly school management should de-emphasize seniority criteria based on

teaching experience when assigning teaching responsibilities as it relates to learners with dysgraphia, teachers' capacity should be improved professionally to increase their knowledge and competence in using instructional accommodations in education of learners with disabilities. Institutions with special needs education programmes in Nigeria should develop full courses on instructional accommodations to further equip or produce special teachers for varied inclusive classrooms. More concerted efforts should be geared towards advocacy on accommodations and continuous attitudinal re-orientation to improve and sustain the desired results. Quality assurance and regulatory bodies in the education sector should re-train their staff to adjust the policy on accommodations to global benchmarks without neglecting national interests and monitor the practice of instructional accommodations to meet professional standards without compromising the interests and needs of the learners. Finally, suggestions were made to further improve and expand research on this subject matter to support the use of instructional accommodations with research-based evidence.

TABLE OF CONTENT

1 INTRODUCTION	8
1.1 Background of the study	8
1.2 Statement of Problem	12
1.3 Purpose of Study	14
1.4 Research hypotheses	15
1.5 Significance of the study	17
1.6 Theoretical framework.....	18
1.7 Delimitation and scope of the study	20
1.8 Limitations of study.....	21
1.9 Definition of terms	22
2 LITERATURE REVIEW	24
2.1 Teachers' teaching experience and utilization of instructional accommodations	24
2.2. Teachers' knowledge on instructional accommodations	27
2.2.1 Knowledge on selection and evaluation of instructional accommodations	28
2.2.2 Knowledge on Instructional accommodations in Presentation of learning activities .	30
2.2.3 Knowledge on Instructional accommodation in mode of response to learning activities.....	31
2.2.4 Knowledge on Instructional accommodations in time schedule of learning activities	32
2.2.5 Knowledge on Instructional accommodations in setting of learning activities	32
2.3 Teachers' participation in conferences/workshops in specific learning disabilities.....	33
2.4 Teachers' specialized training	37
2.5 Teachers' attitudes towards instructional accommodations	52
2.6 Teachers' utilization of instructional accommodations.....	54
2.7.1 Conceptual review of dysgraphia	59
2.7.2 Etiology and typology of dysgraphia	60
2.7.3 Characteristics of dysgraphia	62
2.7.4 Diagnosis and prevalence of dysgraphia	63

3 RESEARCH METHODOLOGY	71
3.1 Research design.....	71
3.2 Study Area	71
3.3 Population of the study.....	73
3.4 Sample of the study.....	74
3.5 Sampling Technique	76
3.6 Instrument for data collection	76
3.7 Validation and reliability of the research Instruments	79
3.8 Method for data collection through questionnaire	80
3.9 Method of data Analysis	81
4 PRESENTATION AND DISCUSSION OF RESULT	82
4.1 Presentation of Result.....	82
4.1 Discussion of Result.....	90
5 SUMMARY, CONCLUSION AND RECOMMENDATIONS	99
5.1 Summary of the study	99
5.2 Conclusion	100
5.3 Recommendations	102
5.4 Suggestions for further studies	103
REFERENCES	105
APPENDIX A.....	116
APPENDIX B.....	117
APPENDIX C.....	127
APPENDIX D.....	129

CHAPTER ONE

1 INTRODUCTION

1.1 Background of the study

Exceptionality is a two side coin, on one side are those who are positively exceptional (the gifted &talented) on the other we have the negatively exceptional ones (children &adults with disabilities). Among this category there are those with disabilities that have no sensory or facial evidence. It is professionally called learning disabilities or specific learning disorders (Bartonova, 2014, APA, 2013). From its formal and humble beginning it was known by different names with more heavier psychological effects than the disability itself, Samuel kirk who is seen as the father of this disability brought a marked change by calling it officially learning disabilities. This lay to rest issues associated the nomenclature. However, its conceptualization and understanding became a pressing discourse among concern stakeholders (teachers, parents, associations and government) in conferences, seminars, workshops and other formal meetings. Arising from this, many attempts were made to succinctly defined these conditions among such efforts is the seemingly universally accepted and mostly cited one by National Joint committee on Learning Disabilities(NJCLD). Lerner and Kline (2006), the body defines it as:

A generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social interactions may exist with learning disabilities but do not

by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbance), or with extrinsic influence (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences (p 16).

Interestingly within this group of disabilities there is a sub type called dysgraphia, a handwriting disability. APA (2013) defines it as impairment in written expression that manifest in a discrepancy in the written product or sample between the age, education and level of intelligence of the individual. It further emphasize that symptoms such as lack of clarity of ideas, poor paragraphing, multiple grammatical errors among others must be expressed persistently for at least six months despite evidence based intervention on the disability. In the medical profession this disability is referred as dysgraphia while in special education is known as either hand writing disability or written language disorder. The term dysgraphia is seemingly common in the literature because of it origin and the domination of research on the disability by the medical professionals. As a disability, hand writing disorder has academic and psychological effects on the dysgraphic unfortunately; it is misconceived and not given the desired attention. When there is comorbidity other disabilities are remediated at the expense of dysgraphia and the problem remains (Bender,2004).

There are different theories and perspectives to understanding the chemistry of dysgraphia. Studies have shown that this disability can better be understood by looking at major etiological factors as depicted by motor-visual perceptual theory and contributive factors like non inclusion of handwriting in school curriculum and lack of qualified and adequate teachers to teach the skill.

Principally, the spatial characteristics of written sample and ergonomic factors affect the holistic product there by rendering it illegible or unreadable.

The value of quality and good handwriting in different setting cannot be undermined even in the highly technology influenced era. In the school environment most of the daily activities are written. Hoorn, Maathuis and Hadders-Algra (2013) reported that, 30-60% of activities in school require children to write either in one form of class activity and assessment or the other. Privately, one needs to make a shopping list, write and pass a note in a meeting to someone, write down personal information in a diary, take down briefs in a meeting and to write down telephone messages all these require well developed writing skill and legible handwriting. While is relatively easy for learners or individuals without this disability those who are dysgraphic find it unduly difficult and laborious. Considering the importance of this skill in daily life and the reality of the disorder they are most often frustrated half way in the process of performing any written task or tend to avoid it totally. When it is avoided the opportunity to develop the skill is lost and this lead what is called skill arrest.

The common trend and problem in the field of specific learning disorders (SLD) is the lopsided attention in favour of dyslexia even in research and teaching at the expense of dysgraphia and dyscalculia. The ratio of this is put at 3:1, while high prevalence of dyslexia is presented as argument to support this trend it should be understood that both skills are critical to success in school and life generally. More so, it should be realized that there are opportunities for comorbidity of these conditions thus therapy in only one is as good as none, efforts to address these disorders should be holistic.

International policies and conventions on human rights equalized access to education consequently every Nigerian classroom has learners with the disability (Obani, 2006). The

implication of this is that stakeholder particularly teachers should brace up to challenges of this disability and its effect on learners in schools. This has become necessary because they must actively participate and benefit from every instructional activity such as writing examinations, tests, copying notes and other tasks that involve written expression. Learners with dysgraphia find it very difficult to cope with such written tasks. To give them equal opportunity to learn and actively participate in all instructional activities the school should comply with and make provision for accommodations as entrenched in the Convention on the Rights of Persons with Disabilities and train teachers to integrate accommodations in instruction and assessment in their pedagogical practices for those who are dysgraphic (Kamala & Ramganes, 2013).

Accommodations are practices, procedures, and devices that provide equitable access during instruction and assessment of students who have documented evidence of disabilities. The use of accommodation ensures that every learner with a disability in the school has a fair and equal opportunity to learn by receiving standard instruction and demonstrate mastery (Colorado Department of Education, 2015). This has become sacrosanct in special needs education as a measure of inclusion and complying with the principle of universal design for learning. However, accommodations must be used by teachers appropriately as it is not meant to reduce the value or acceptable standards rather to reduce the effect of dysgraphia on the child's learning process. This reinforces the place of professional and global best practices in administration of accommodations either in instruction or assessment. Ajuwon, (2002), VESID, (2006) indicate that accommodations are generally in four categories of presentation, response, time schedule and setting, however, each disability, child's needs, task among other factors are considered by the school and IEP team. For learners with dysgraphia accommodations like technology devices (recording tools, PC, tablet,

phones, digital pen etc) human scribe, extra time, preferred seat/setting and others are frequently used by teachers in Nigeria.

Base on the desire to achieve the purpose of accommodations and its appropriate use, this research is design to examine variables or factors like teachers' teaching experience, knowledge on accommodations, teachers' participation in conferences/ workshops, teachers' specialization, and teachers' attitudes towards accommodations that may influence utilization of accommodations in teaching children with the handicap condition.

1.2 Statement of Problem

A typical Nigerian classroom has learners with varied abilities and disabilities. Among those with disabilities are students with dysgraphia, a severe and extremely difficulties to write or express themselves in written activities such as class work, homework, examination, and test or even writing personal information to a friend. This is due to lack of ability to integrate auditory, visual, motor and spatial skills require for writing. As a result of these difficulties their school assignments are most often left incomplete. At times they are asked to recopy which is always not be better, 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. They perform poorly on any written assessment, teachers, friends, peers and parents frowns at their best attempts. They find it very difficult to produce neat, legible work and express their thoughts in writing (Jones, 2009). They approach any task that involves writing with tension and fear. These result to emotional issues like stress, anxiety, low self-concept, failure, frustrations and eventual withdrawal from school because they cannot progress alongside their peers in the same general curriculum. Davis (2015) indicates that ratio of these students who find it difficult to cope with dysgraphia in schools is 5:4. Despite this, USED (2004) and UN (2006)

confirms that they have rights to equal and quality education to the extent of their ability. NCLD (2006, 2008) reports that student with specific learning disabilities including those with dysgraphia who access instructional accommodation services participate actively in every instructional activity and even perform better in assessment that involves writing. This research evidence implies that teachers working students with dysgraphia should be able to reduce the effect of the disability on the students and learning process through professional use of instructional accommodation in teaching students as measure of giving every child equal chance to actively participate and benefit from all instructional activities in the school. Ajuwou (2012), reveals that 60-75% of teachers lack knowledge on instructional accommodations and do not utilize it in teaching to increase participation of students in class and improves their level of mastery in specific content area. Thus, the problem of this study could be summarized into the following questions:

- 1) How does teaching experience influence utilization of instructional accommodations in teaching children with dysgraphia?
- 2) To what extent does teachers' knowledge on instructional accommodations influence utilization of instructional accommodations in teaching of children with dysgraphia?
- 3) How does teachers' participation in conferences/workshops in specific learning disabilities in relevant themes influence utilization of instructional accommodations in teaching children with dysgraphia?
- 4) To what extent does teachers' specialized training influence utilization in teaching children with dysgraphia?
- 5) How does teachers' attitudes influence utilization of instructional accommodations in teaching children with?

1.3 Purpose of Study

This study will focus on variables or factors that influence teachers' utilization of instructional accommodations in teaching children with dysgraphia in Cross River and Akwa- Ibom state.

Specifically it will investigate if:

- 1) Teaching experience influence on teachers' appreciation of the concept and use of instructional accommodations in the education of learners with dysgraphia.
- 2) Teachers' knowledge influence the utilization of Instructional accommodations in teaching children with dysgraphia.
- 3) Teachers' participation in conferences/workshops in specific learning disabilities and relevant themes influence utilization of instructional accommodations in teaching children with dysgraphia.
- 4) Teachers' training/specialization influence utilization of instructional accommodations in teaching children with dysgraphia.
- 5) Teachers' attitudes influence utilization of instructional accommodations in teaching children with dysgraphia.

1.4 Research hypotheses

The following hypotheses will guide the study.

H1: Teaching experience has influence on teachers' appreciation of the concept of instructional accommodations and its use in education of learners with dysgraphia.

Ha: There is a significant difference between teachers with greater and lesser teaching experience in the appreciation of the concept of instructional accommodations and its application in education of learners with dysgraphia.

Ho: There is no significant difference between teachers with greater and lesser teaching experience in the appreciation of the concept of instructional accommodations and its application in education of learners with dysgraphia.

H2: Teachers' knowledge on instructional accommodations has influence on utilization of instructional accommodations in teaching children with dysgraphia.

Ha: There is a significant difference between teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations in teaching learners with dysgraphia.

Ho: 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.

H3: Teachers' participation in conferences/workshops in specific learning disabilities has influence on utilization of instructional accommodations in teaching learners with dysgraphia.

Ha: There is a significant difference between teachers with higher and lower participation in conferences/workshops in specific learning disabilities in their utilization of instructional accommodations in teaching learners with dysgraphia.

Ho: There is no significant difference between teachers with higher and lower participation in conferences/workshops in special education in the utilization of instructional accommodations in teaching learners with dysgraphia.

H4 Teachers' specialized training has influence on utilization of instructional accommodations in teaching learners with dysgraphia.

Ha: There is a difference between teachers with and without specialized training in their utilization of instructional accommodations in teaching learners dysgraphia.

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

H5: Teachers' attitudes have influence on utilization of instructional accommodations in teaching learners with dysgraphia.

Ha: There is a significant difference between teachers with positive and negative attitudes towards utilization of instructional accommodations in teaching learners with dysgraphia.

HO There is no significant difference between teachers' with positive and negative attitudes towards utilization of instructional accommodations in teaching learners with dysgraphia.

1.5 Significance of the study

When the study is completed the findings will be of up most importance to the following stakeholders;

Ministry of education as a quality regulating body it serve as input in their quality assurance mechanism and parameter for measuring inclusiveness of education to all irrespective of ability or disability.

Curriculum planners will found it useful in the evaluation process of the existing curriculum with the view of making adjustment where necessary. For instance, the need for input from learners with this disability into the curriculum process will be imperative and improve curriculum development process in Nigeria.

Legislature and policy makers will find the recommendations importance as the will form basis for legislation and policy on specific areas such special funding for technology base accommodations, collaboration between parents, teachers and learners on the training and use of accommodations.

Parents will equally be exposed to benefits and importance of accommodations in the education of their children with the disability. Also, their responsibility to ensure the use accommodations at home where necessary will be become obvious and essential.

Teachers will appreciate how effective use of accommodations change their perception about the learners, their disability, improved participation in teaching-learning process and performance in assessment. Their strength and weakness in the use of accommodation will form basis of the in service professional development to reduce teachers burn out syndrome.

Students or children with dysgraphia' participation in instructional activities and assessment increase/ improve as the effect of disability will be reduced by appropriate accommodations. The level of frustration experienced in struggling to cope with disability and mastering concepts and skills in the content area will be taken care of.

Advocacy groups will find recommendations of this study useful to expand the scope of their advocacy, specifically to create awareness among the public, encourage the use of accommodations, make legislative input and agitates for special for accommodations.

Academics, educational institutions, centers will key into the research findings to expand the scope in terms of variables and area of coverage. Beside this, institutions involved in the training of teachers will include accommodations in their professional development programme as expansion of the current introduction to special needs education for all teachers in training in Nigeria.

1.6 Theoretical framework

This study is supported by the social constructivist theory propounded by Lev Semyonovich Vygostky (1896-1934), a Russian psychologist. This theory as postulated has three major elements, the social interactions (SI), the more knowledgeable other (MKO), and the zone of proximal development (ZPD). Lev Vygotsky believed that interaction or interplay of these elements are critical to child development and learning process (Peters, 2017, Ozer,2004). The proponent of this theory holds that social interactions enhance, precedes learning and development. These interactions occur in levels such as social, individual, and between people where inter-psychological and intra-psychological processes takes place to promote active participation in teaching-learning situation. Another element articulated is the more knowledgeable other (MKO), this refers to anyone who has a better understanding or higher ability than the learner in a particular

task, process or concept under focus (Wright, 2016). In a teaching process MKO is often considered to be a teacher who by professional training, development and certification is adjudged to be qualified to direct or guide learners to achieve the predetermined objectives. However, in general terms MKO according to this could be a coach, adult, and computers. The zone of proximal development (ZPD) as conceived by the theorist is the gap between actual competence level (level of problem a learner is able to solve independently) and the potential development level (level of problem a learner could solve with the assistance or guidance from teacher as MKO). In the ZPD three zones are identified, zone one has task(s) that a learner can independently perform, zone two has task(s) that learner can only do if she gets assistance and zone three has task(s) that are currently unreachable or beyond the learner(Crawford, 1996).

The implications and relevance of the social constructivist theory (SCT) to this study is in the following pedagogical principles derived from the theory which include;

- Social interaction with other peers
- Learner centered instructional process
- Teacher-student collaboration in the learning process
- Classroom as constructed social and learning environment
- Learning at individual pace.

Additionally, the relationship between the theory and this study is in the ZPD where learners with hand writing disability (dysgraphia) are confronted with writing tasks such as copying notes, completing class work, assignments among others. Due to disability the above mentioned tasks cannot be independently performed by the learner without assistance which comes as various and appropriate instructional accommodations from the teacher as MKO. Learners with dysgraphia

need varied accommodations just as the level of assistance varies in ZPD. The concept of assistance or help in this zone is to reduce the effect disability on child ability to learn, participate actively in instruction and demonstrate the level of mastery of the subject matter, this can only be possible if instructional accommodations are provided as well as provide equal opportunity/level playfield to all learners base on inclusive principle. Another implication of ZPD is that curriculum planner, teachers, policy makers should see it as the focus of any learning activity (Mcleod, 2012). More so, the relevance of this theory to the present study is in light of the fact that children with dysgraphia need IEP, learn at their pace, requires social inclusion to break the artificial barriers created by societal construct called disability. Most importantly, ZPD in special education practice is where the child needs instructional accommodations under the guidance of professionals to do what (writing tasks) disability prevents him/her from doing.

1.7 Delimitation and scope of the study

The study is restricted in terms of variables to factors that may influence utilization of instructional accommodations in the education of learners with written language disability (dysgraphia) such teaching experience, teachers' knowledge, teachers' participation in conferences/workshops, specialized training, and attitudes. The scope is limited to special schools in Cross River (Special Education Center, Abom-layout Calabar, Good shepherd Special School, Ogoja, St Joseph Center for the Visually Impaired, Obudu) and Awa-Ibom state (Daughter of Charity, Uyo, St. Louise Special school, Ikot Ekpen, Special Education Center for Exceptional Children, Uyo) Nigeria with focus on teachers in the six schools. The schools are inclusively run in both primary and secondary sections.

1.8 Limitations of study

The task of conducting a research has always been a very challenging one especially as this level of study. This research was not an exception as the researcher was confronted with many challenges which are partly due to the developing status of the country where the study area is located. Majorly, in the course of this research, the following challenges were encountered however; they were overcome using global best practices that guide the conduct of research in Nigeria.

Funding was a major issue that affects the prompt completion of this study as the cost was beyond student researcher income. Many attempts and efforts to get financial assistance from University of Calabar, Nigeria was not successful however, with the support from my supervisor the problem was solved.

Attitudes of respondents was initially not supportive as the teachers, head teachers and principals were busy with the conduct of end of term examinations and some school could not kept to the schedule that was sent to them ahead of time. In agreement with the school the researcher went back after the examination to complete the interview and retrieve questionnaire and this increase the return rate.

Security challenges, Boko Haram and Herdsmen/ Farmers clashes in Nigeria affects every activity as there was restriction of movement in some Northern part of the study area in Cross River State however, with permission from the state security service (SSS) the researcher was given a pass to conduct the field work.

Poor internet services in some parts of the study area also posed a challenge as communication between the researcher, assistant researcher and the respondents was difficult and his make the

field work very stressful and time consuming. Also unreliable mobile phone network was equally a big challenge as it was difficult to confirm appointment and schedule for the interview with head teachers and principals.

Geographical sizes of the study area is so large that the researcher travelled more than eight hours on bad road network from one school to another, with determination and hospitality of some schools it was possible to cover all the schools although with longer duration. Despite these challenges, the quality of field work, data collected and the entire quality of research was not affected.

1.9 Definition of terms

The following terms are operationally defined.

Instruction: A teaching and learning activities facilitated by teacher for learners with hand writing disability in the classroom, school and home to improve learners' behaviors.

Accommodations: This refers tools, procedures and practices used in school and home to provide equal opportunity to learners with dysgraphia to actively participate in every learning activity and demonstrate knowledge gained in content area.

Teaching experience: This is number of years a teacher has spent in his/her teaching career including all events that contributes teacher's competency.

Teachers' attitudes: Teachers dispositions to learners with specific learning disabilities and the use instructional accommodation in teaching them.

Teachers' specialized training: Specific, unique formal course of training in SLD a teacher undergoes to be able to teach and apply accommodations to learners with specific learning disabilities in school or at home.

Teachers' knowledge: It the level of awareness, competence, information and understanding on concept of accommodations and the process of administration to learners with dysgraphia.

Utilization of instructional accommodations: It is the ability of the teacher to apply accommodations appropriately to meet the needs of learners with dysgraphia.

Presentation accommodations: These are changes in the way learning activities are presented to learners to reduce or prevent their disability from interfering with active participation.

Mode of response accommodations: It is simply how learners demonstrate or response to tasks in class or at home.

Time schedule accommodations: The when and duration learners are given to complete a particular task or activity.

Setting accommodations: These are locations where instructional activities or assessment task to minimize the effect of disability on the learner and the task.

Human scribe: This is a person trained to write down what a learner with disability dictates without editing what has being dictated. Human scribe is sometimes called peer writer.

Learners: Children who receive education in primary and secondary schools in Nigeria.

Dysgraphia: It is a hand writing disability that affect written sample often characterized by illegibility, poor expression and attitude to writing tasks.

CHAPTER TWO

2 LITERATURE REVIEW

Literature review of this study will focus on empirical studies of related researches; it will be done under the following sub-headings.

2.1 Teachers' teaching experience and utilization of instructional accommodations

Global education policy making waves currently is inclusion, this policy mandate countries to make provisions for all learners to be educated in the same instructional setting taking into consideration their abilities or disabilities. Part of the considerations to make is the use of instructional accommodations to cater for needs of learners with disabilities such as hand writing disability known as dysgraphia. As result of the relative success of inclusive education in Nigeria, classrooms and school communities have become heterogeneous there by increasing the responsibilities or demands on teachers. In addition to ensuring effective instructional delivery they must make sure those with disabilities have access and opportunity to actively participate in instructional process. To achieve this, the use of instructional accommodations becomes obvious.

Teachers' utilization of instructional accommodations is conceptualized here as effective and efficient application of appropriate procedures, tools and practice that provide equitable access to instruction for students with documented disabilities to increase active participation in learning process, enhance demonstration of knowledge and mastery of skills (Colorado Department of Education, 2015). Teachers' ability to do this depend on many factors among these is teaching experience. Teaching experience is simply and most often measured or determined by number of years a particular teacher has spent in his or her teaching career. Teaching is complex activity that

involves effective planning, organization of instructional resources, prioritizing ideas, interacting with learners, monitoring, adjusting and differentiating instruction to meet varied learning styles, abilities and disabilities purposefully to attain the predetermined objectives (Char,2003). From the above, it is clear that teaching is not limited just transferring textbook knowledge it requires real and practical classroom experience in using instructional accommodations to teaching learners with dysgraphia (Harzing,2016).

Critical surf of a good database in education will reveals an unending arguments or researches on the influence of teaching experience on different variables such as, productivity, students learning outcome, burnout, use of specific principles/methods among others. Klni and Podolsky (2016) study report that teaching experience remain a cardinal factor that improves instructional process, students performance and teachers productivity including their ability to unlock curriculum and increase access to participation in a teaching-learning process through instructional accommodations that relate to learners disabilities. The study further reveals that teachers experience positively correlate with ability to adjust conventional mean of presenting instruction and work environment which contribute to teacher productivity. It however, stressed that mere passage of time does not make teachers capable of applying accommodation strategies but the ability to learn from the mistake of the past ,accepting mentorship, rigorous self evaluation and building on the identified weakness as well as improving on the existing strength. In a related study, Regents Center for Learning Disabilities (2016) researched into factors that facilitate the use of academic accommodations on categories of disability and found strong connections between teacher experiences and use accommodations such as in-class note takers, peer writers and extended time for learners with handwriting disability. William-Mary Training & Technical Assistance Center (2008) research on reasonable and effective accommodations considerations,

findings concludes that application of appropriate accommodations is complex and process based. For instance constituting IEP team that take decisions on accommodations that meet the needs of students, comply with either IDEA, 504 plan in the case of America or other laws in any country, actual application and frequent evaluation of it progress depend mostly on the experience of the stakeholders including teachers.

Ewetan and Ewetan (2015) in a study of teachers' teaching experience used 388 teachers in 31 public schools in Ado-Odo/Ifo local government, Ogun state, survey design, and data were analyzed using t-test. The result revealed that teachers with 10 years and above teaching experience do better in the use instructional resources consequently produce better result than those with have less than 10 years. Similarly, Adeyemi, (2008) report from a study of 180 sampled teachers using teachers' inventory and semi-structured interview and correlation analysis found out that teachers with five years and above have better understanding of the students and can appropriately align instructional tools to their disabilities. From the foregoing, there is general consensus among these authors experience promote teachers effectiveness which include appropriate use of reasonable accommodations.

On the contrary Ladd (2008), reports that seniority or teaching experience only counts in the first few years after which marginal returns begins to diminish. In the same vein Hennessy, Harrison and Wamakote (2010) opined that although there are substantial research evidence that experience is required for effective application of instructional accommodations to learners with disabilities, most accommodations in the 21st century are driven by technology that need teachers with cutting edge skills and competence to resourcefully use such technology. To support this position, Colorado Department of Education (2015) notes that instructional accommodations like Dragon software, digital smart pen that takes notes and record audio technology does not necessary depend

on experience. Teachers without the skill/competence required to use them appropriately cannot do so no matter the years of experience. The implication of this is that newly trained teachers for 21st century pedagogy are better equipped to use technology based academic accommodations.

2.2. Teachers' knowledge on instructional accommodations

Knowledge generally means awareness, fact or having an understanding of something. Thus, teachers' knowledge on instructional accommodations will therefore be defined as awareness, information and understanding teachers have about the concept, nature, justification and process of administrating instructional accommodations to learners with hand writing disability. The concept of instructional has become essential part of education of learners with disabilities including those with dysgraphia due to the philosophy that it reduces the effect of disabilities on the difficulties faced by those with disabilities. This is why teachers as one of the major stakeholders in education of these learners need to have good knowledge of the concept and its process of administration. More so, effective use of instructional accommodations is as complex as disabilities especially technology based accommodations. In the light of this knowledge of accommodations can help teachers set good climate of responsibility, concern, and willingness to provide students with appropriate accommodations. Instructional accommodations are tools or procedures that ease and provide equal access for learners to actively participate in every learning activity in the classroom, school and home. This suggests that without such accommodations learning will be extremely difficult for those with disabilities.

Ajuwan (2012) study on the relationship between teachers' knowledge on accommodations and its application during assessment indicates that teachers' knowledge on type of accommodations the child needs and the process of its evaluation to monitor the success or failure of the accommodations is important. It was further reports that teachers without the perquisite knowledge

often abuse the purpose of accommodations especially during assessment causing the process to lose its credibility and validity.

2.2.1 Knowledge on selection and evaluation of instructional accommodations

One of the critical areas where teachers' knowledge must come to bear is in the selection and evaluation of appropriate accommodations to meet the learners' disability, instructional task and assessment where necessary. Selection implies that a teacher make a choice from many other accommodations that best meet certain conditions however, before selection the teacher must be aware of the policy frame work or appropriate legislation guiding the use of accommodations. The University of the State of New York (2006) notes that the use of accommodations must be in line relevant Federal laws and regulations such as,

- Individual with Disabilities Education Act (IDEA) including Individual with Disabilities Education Improvement Act,2004,
- Part 100 and 300 of the code of Federal Regulations,
- Elementary and Secondary Education Act (ESEA)
- American with Disabilities Act (ADA) of 1990
- Section 504 of the Rehabilitation Act of 1973.

In Nigeria it is regulated by the national policy on education. The basis of the policy is to ensure uniformity in terms of objectives of instructional accommodations and avoid unprofessional practices. In addition to the above primary criteria for selecting accommodations is the student's learning characteristics, category, degree of disability and the construct to be assessed. Kamula and Ramganes (2013) survey on teachers' knowledge about accommodations revealed that teachers' ability to select appropriate accommodations depend on his/her understanding of eligibility criteria as determined by the IEP team. The study also indicates that teacher

membership in the team makes it easy to select and use accommodations appropriately. To facilitate proper selection comprehensive evaluation procedures such as formative assessment, individual diagnostic, assessments observation, annual assessments, or functional behavioral assessments should be carried out (Elliott & Thurlow,2000).

Bowser,Korsten and Zabala, (2004) study on how best accommodations can be selected by teachers report that teachers with knowledge of how the SETT support frame work helps in making comprehensive decisions on what accommodations will be appropriate and meaningful for the learner often make good selection. According to the authors SETT is selection system based on the needs of the student, the environment which a child functions, the task and the tool necessary for the task. More specifically, their study requires that basic information such what is the current strength and ability of the student, special needs, and desired expectations? Also, about environment teachers should be interested in knowing the equipment currently available, the physical arrangement, instructional setting and attitudes of others to accommodations. The task is simply the nature instructional task such as writing activities, performance expectations, duration and number of task, The tools (accommodations) component is concern with what will help the learner with dysgraphia to achieve the task, These could be technology, human, services, and supports the child needs to be active in all instructional activities in the classroom and at home. Teachers' knowledge on these vital inputs and their mutual relationship enhances appropriate selection of instructional accommodations.

Accommodations is not a one shot approach, it is continuous process that requires frequent monitoring and evaluation to determine the level of success or failure as basis to support the continued use of a particular accommodation or change to a different one. Evaluation of accommodations involves the collecting and analyzing data on the use and effectiveness of

accommodations to meaningful participation of learners in all learning activities. Council of Chief State school Officers (2011), in a survey of areas of teachers competence in the use of accommodations reports that ability to evaluate it progress in important to the overall success of learners' education. The study also indicates data for such evaluation can be sourced from the IEP team, observations of learners while using accommodations, interviews with the learner and parents. Considering the value of such data it is necessary that the process should be objective, valid and comprehensive, cover areas like compliance to policy or legislation, strength, weakness of learner's encounters, functionality of technology based accommodations among others. For easy evaluation process especially in ICT driven era technology-based platform is every important for gathering of information. The task of teaching learners with hand writing disability will be frustrating if teachers are not knowledgeable on accommodations (Colorado Department of Education, 2015).

2.2.2 Knowledge on Instructional accommodations in Presentation of learning activities

Accommodations are generally grouped into four categories, presentation, mode of response, time schedule and setting. Presentation accommodations deals with how or format learning activities are presented in the classroom, how learners access information without being hindered by their disabilities. There are two perspective to this, the instructional procedures and disability perspective. The former focused on instructional steps while the latter is concern with matching learners' disabilities with appropriate accommodations. VESID (2006) studied teachers' administration of accommodations, result shows that 65% of teachers who had knowledge on different way of presenting accommodations to learners while 35% were ignorant and had difficulties meeting instructional needs of learners with disabilities. Bureau of Exceptional Education and Students Services (2010) outline different presentation accommodations that could

be used in teaching learners with dysgraphia to include, audio tape technology (audio cassette tape, digital recorder, audio books), picture, symbols, adapted text, Apps for sharing video lesson, and online book share resource. As mentioned earlier, learners with dysgraphia find difficult to take note either directly from the board or teachers dictation. To provide accommodations in presentation lecture note, assignment, class work and classroom directions could pre-recorded or during instruction on any appropriate accommodations technology mentioned above. If it is during instruction the learner should be allowed to sit near the teacher to ensure quality of the recorded sound. Copy right law should be taken into consideration in application of such accommodations (Colorado Department of Education, 2015).

2.2.3 Knowledge on Instructional accommodation in mode of response to learning activities

Mode of response accommodations is method learners' response to assessment. Conventionally, teacher gives tasks to learners as a way of evaluating instructional process and they are expected to response in writing with pen-paper. While others will find it easy those with hand writing disability find it difficult even when they what to write because of their disability. Providing alternative to the above format give them opportunity to participate effectively in demonstrating what they have learnt. Common response accommodations for these learners include among others, human or peer scribe, recording of answers, providing answers orally ,word processor, pencil or pen grips, paper stabilizers, finger spacers, specialized papers, slant board, word prediction software, adapted pencil, and digital note taker. Lere (2009), recommend that training for teachers should cover these technologies because they will empower them to cope to with challenges of teaching learners with writing disability and reduce the chance of teachers' burn out. This has become imperative due equalization of educational opportunity and inclusive school policy. Obani (2006) support this recommendation in his findings which shows that the frustration

and eventual dropped out of schools among students with SLD is not due to the disability but inability of teachers to adequately meet the needs of these students in Nigeria.

2.2.4 Knowledge on Instructional accommodations in time schedule of learning activities

Time schedule is another category of accommodations learner with hand writing disability need to be able to cope with learning activities and assessment particularly when the instructional task is written. For instance, while it may take others without disability 40 minutes to complete a written assessment those with this disability may take an hour or more to finish the task. The principle of time schedule is that every task that take up to 40 minutes learners with disability should be allowed to take a break (Adeola, 2016). This implies that they need more time to perform any task; this is pertinent due to type of response accommodations require to enhance their participation in learning activity or assessment. Accommodations in this category according to Nosagi (2015) study are, extended time, double time, multiple or frequent breaks, change of time of the day, and multiple days. All time schedule accommodations must be properly documented in the learner study plan. The grading of task perform with these accommodations is objective and maintain its validity. Teachers' knowledge of this is necessary to effective and meaningfully administers accommodations.

2.2.5 Knowledge on Instructional accommodations in setting of learning activities

Setting accommodations refers to where learners receive instruction or assessment. This involves changes in locations or conditions of the educational setting or environment. Learners need accommodations in this area to address accessibility issues, behavior management, or problem with organization of space and materials. Those who receive certain accommodations that may distract others such as reader, scribe, frequent breaks may also need setting accommodations (BEESS,2010 p.40-42). Frequently used accommodation in this category are , preferred seating,

noise buffers, small group, individual sitting arrangement close to scribe, study carrels, and computer laboratory. Appropriate use of these accommodations have implications for learners disability which the teacher should be aware for instance, using a special room when the services of a scribe is needed will prevent others from accessing answers dictated to the scribe. This and other technicalities are important to the teacher to ensure proper use of instructional accommodations.

2.3 Teachers' participation in conferences/workshops in specific learning disabilities

Teachers' participation in conferences and workshops in this discourse is conceived as a formal meeting of professional teachers who come together to discuss, share and exchange their research findings on various topics within the major theme, its often academic in nature and organization. On the other hand, workshop is a training or capacity building meeting with emphasis on improving the knowledge/ skills of teachers to enhance their functional ability in instructional processes. These activities or events are principally important to continued development and effectiveness of teachers particularly when teaching learners with disability. Research has shown that best or current strategies to educate those with disabilities are discover from research and one of the ways to disseminate such findings is in conferences and workshops. This why Hill (2012) study on value of workshops for teacher including those teaching learners with hand writing disability concludes that, great and effective teachers are those who go beyond call to duty and textbook to continued participation in conferences and workshops. The findings also indicate that conferences and workshop as strategies for continuing education offer extra opportunity to be expose to knowledge and skills that were not possible to learn during professional course of study. This is very true about the subject matter of the present study because most teachers only heard

about the concept of accommodations in the last few years. Thus, conferences/workshops will expose them the technology based accommodations that require skills and competences for proper utilization in instructional process. From the foregoing, it is imperative for schools in Nigeria to encourage and sponsor teachers especially those concern with disability to participate in such training activities in order be able to integrate technology base accommodations into classroom instruction, build their confidence and school leadership skills for the 21st century education and beyond.

In Nigeria, there two professional Associations that can organize conferences or workshops that primarily focus on specific learning disabilities to educate refresh and improve capacity of teachers for effective instructional delivery to learners the disability. These are National Association for Exceptional Children (NAEC) and National Association of Special Education Teachers (NASSET). The former is an umbrella association for stakeholders in special needs education while NASSET is principally teachers based charged with responsibility of updating the knowledge/skills of teachers on current research/evidence based educational strategies for learners with special needs. However, departments of special education in Universities, NGOs, State Ministry of education and center like *Center for Learning Disabilities Jos*, Nigeria can be involved in workshops and seminars that enhance the effectiveness of teachers. It is important note that NAEC annual conference is always preceded by workshop for teachers in different categories of disabilities. NAEC (2015) in an evaluation of the impact of her workshops on teachers' professional competence reported that more than 200 teachers teaching children with special needs in schools across south-south geo-political zone of Nigeria have been empower with skills to integrate common and low technology into their pedagogical processes. Cross State Ministry Education (2012) survey report on teachers continued training reveals that, 300, 546, 358, 671 special

education teachers participated in the re training workshop organized in collaboration with State Universal Education Board (SUBEB) in 2008,2009,2010 and 2011 respectively. Thematic areas covered in these workshops ranges from inclusive practices to technology accommodations for children with disabilities. In a similar research on content and product comparative evaluation findings shows that teachers who were exposed to training on emerging themes in specific learning disabilities such as collaborative teaching, ICT, accommodations strategies and accountability in special needs education showed improvement in managing learners with SLD than those without such knowledge/skills (Ozzeh, 2015, Robinson, 2013). At the national level teachers' professional development through participation in conferences/ workshops took a center stage in most government discourse in the last five years. This is as result of the public outcry concerning crisis in education sector. Additionally, the plight of seemingly neglected special needs children especially those who's disability is hidden is equally gaining attention. Fareo (2013) report that national conferences, workshops and seminars are thought of as best strategies to reposition teachers for better service delivery especially to those with disabilities. This has become clarion call as the need for quality services has been reinvigorated in global policies. The National Teachers' Training Institute in Nigeria is charged with this responsibility under Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) Themes in specific learning disabilities featured prominently in manual for this training. The essence of this inclusion is to expose teachers to skills that will help improve the quality of teaching/learning of learners with dysgraphia as well as other disabilities. The responsibility of teaching learners with dysgraphia goes beyond instruction in a content area to building their areas of weakness and helping to overcome phobia for written task, arm or finger fatigue, good writing posture, pencil grip, and keyboard skills. Richard (2008) study emphasize teachers participation in online training

like e-conference, workshops and seminar as opportunity to meet experts in various aspect of the disability without any cost. The findings shows online platforms for these training activities has not barrier such distance as the can be done from the comfort of office, living room; participants have advantage of getting access to other e- resource to complement their knowledge. For instance, participants could deal directly with manufacturer or producer of any accommodation technology and gain explanations that would not have being possible. E-conferences offer opportunities for experience sharing with parent who child uses accommodations or teachers with experience in managing the targeted learner. This 21st century opportunity has been provided to improve quality of teaching learners with dysgraphia.

Participation in conferences is valuable opportunity in education sector globally. In America Center On Disabilities has over the years been organizing conferences for special education teachers, researchers, exhibitors of assistive technology, and parents to share knowledge and best practices in the use of accommodations/ assistive technology as well as provide practical solutions that can be utilized to remove barriers that prevent full participation of persons with disabilities in education, daily lives and active involvement in societal life (Center On Disabilities, n.d). There seem to be general consensus that conferences/ workshops are valuable strategies to developing teachers' capacity however. Ihenach (2006), study in Nigeria reports that conference is only fashionable among lecturers teachers in primary and secondary schools do not consider conferences important to their professional development they could attend workshops when is a condition for promotion or financial benefits are attached. Considering the motive they can meaningfully participate in order to gain knowledge and skills that could contribute to teaching their clients with special needs.

In Nigeria conferences organized by the above mentioned professional associations are held once in a year and are preceded by a workshop on relevant themes; often last for at least four days. Workshops organized by Ministry of Education in the two states in collaboration with Universal Education Board are held twice in a year with duration of two to four weeks during long vacation. To ensure quality assurance conferences and workshops must meet predetermined parameters set by Ministry of Education, regulating agencies, and professional Associations. These parameters among others include;

- The theme must focus on specific area of national needs such as disability and related issues.
- The conference or workshop must widely and promptly publicize.
- The organization must comply with National due process and standard.
- They must have participants' feedback mechanism.
- Inclusiveness in terms of participants and attendance.
- Professionals in special education must be involved in organization and participation.
- Schools and relevant organizations or stakeholders such as parents of children with specific learning disabilities should be invited.

2.4 Teachers' specialized training

Among categories of disabilities the most difficult group to teach are those with specific learning disabilities because their conditions are heterogeneous, hidden and there is a misconception or understanding of these disabilities including dysgraphia. APA (2013) classifies this disability into three, impairment in reading, written expression and in mathematics. Teaching this category is

quite demanding because each child has needs that requires unique educational strategies, this implies that their teachers should undergo special training or preparation to be equipped with knowledge, skills, and attitudes necessary for the task. In the light of the above, Ruzena (2005) notes that teaching the learning disabled individuals needs a formal and special preparation; such training should aim at building the theoretical perspective of understanding the disability and concrete skills for pedagogy.

More specifically, their specialized training should include but not limited to following:

1) DIAGNOSTIC ASSESSMENT

Special needs education is a services based discipline which requires specific information or data as a basis to be able determine the nature of intervention for any disability therefore, assessment is one of the critical components that deserved adequate attention in the training programme for teachers. Generally, diagnostic assessment seek to provide answers to salient questions on the type of disability, severity, causes, time of onset, how it affect the child etc and more about the assessment process. Information about the process such as what to assess, how to assess, where should diagnostic assessment be done, who is qualify to carry out assessment, when should the assessment be conducted among others are very imperative to successful conduct of meaningful assessment of the disability. Training teachers and other supportive staff for teaching and provision of services to learners with handwriting disability in Nigeria will require more than just conceptual knowledge about the disability because the disability is seemingly neglected and more children struggles with it in school and they find learning process every frustrating. This is why Ruzena (2005), Osurji (2013) advocate that professional training and development of those who will teach learners with dysgraphia should focus on global diagnostic assessment

process and principles so that teachers can be knowledgeable and skilled in areas that concerns assessment of the disability which they suggested to include among others the under listed:

- Fundamentals of evaluation of dysgraphia
- Competency in administration of standardized tests and interpretation of result
- Adaptation of tests where necessary to suit peculiar circumstance
- Understand the psychometric property of diagnostic tools
- Write meaningful report on the assessment process
- Link assessment report and intervention programme
- Use appropriate technology in assessment process
- Use appropriate non inversion means for diagnostic assessment
- Online diagnostic assessment practice and system
- Make referral to other service providers in line best and professional practice
- Most importantly be able to design and apply teacher made test or scale to diagnose various aspect of the disability.

Considering the scope of diagnostic assessment above it is obvious that training of teachers in Nigerian universities for provision quality education and instruction in inclusive schools in the country can only be realized if these and more is incorporated into their professional training programme. Research has shown that evaluation of hand handwriting is very challenging task that is characterized by many issues of validity and reliability of results. Rosenblum, Weiss and Parush (2003), Daniel and Froude, (1998) confirm that handwriting evaluators or diagnosticians are faced with many methodological problems which include among others the following;

- The grading of sample criteria
- Variation in the mode of writing during evaluation

- Variation on instruction for examinees
- The use of different materials such line, unlined paper, pen, pencil etc
- Variability in personal writing style
- Practicability of administration of scales
- Psychometric properties of the tools
- Inadequate qualified evaluators
- Variation in languages (eg Latin, English, Hebrew, German, Czech etc.).

These challenges are real in practical assessment process and the special education teachers cannot be better prepared to confront them in any another place and time than university during their professional training hence the need for specialize training to build their capacity and competency for future practice in Nigeria has become obvious.

2) NEUROSCIENCE OF LEARNING DISABILITIES

Training Programme for teachers should also focus on the mechanism of the brain structure, function and relationship with specific learning disabilities as neurological studies have shown that disorder in some parts of the brain are responsible for deficit in processing information that may result into specific learning disabilities. The connection between the brain and these disabilities have since been established during the foundation stage often refere to as clinical stage in the history of the disability. Studies in this area by early scholars like Goldstein, Alfred Strauss, and Heinz Werner among others indicate that poor handwriting and lack of attention to detail to copying designs is a brain-based malfunction which results into many learning deficits including visual-perceptual problems. Their studies on soldiers who suffered from brain-injuries after the World War 1 revealed that they had learning problems such as letter-reversal, figure-ground relationship, lost of ability to read, and motor difficulties (Bender, 2004). Most recent

studies on brain mapping have also lay credence to neurological perspective to these disabilities, the concept of hemispheric specialization where learning tasks are associated with the left and right hemispheres. For instance, expressive and receptive language, motor task, arithmetic, writing, and attention to details are linked to left hemisphere while spatial orientation, integration, problem solving, creative thinking among others are associated with right side of the brain.

Early attempt to conceptualize the disability by the National Joint Committee on Learning disabilities recognized the relationship between the center nervous system dysfunction and learning disabilities. From the above, it has becomes obvious that sound understanding of the connection between the brain/CNS and learning disabilities is cardinal point of interest in etiology of the condition, this why some researchers have seen the disability as neurobiological condition. From this perspective, heavy influence of medical sciences becomes necessary for proper understanding of the nature and underlying factors. Thus, neurological examination using technique like Magnetic resonance imaging (MRI) and other brain scan methods are recommended for comprehensive evaluation of clients. All these translate into the need to redesign programme for training to special teachers to provide quality education and comprehensive services for learners with specific learning disabilities particularly those with dysgraphia in Nigeria.

3) EDUCATIONAL STRATEGIES

As noted earlier and acknowledge by Federal Government of Nigeria (2006) education has remain a tool for personal and national development. This is supported by United Nations Convention on Rights of Persons with Disabilities (2006) consequently, all nations have been mandated to adapt this into their national legislation to serve as a legal frame work provision of quality education for all including those with dysgraphia. To further expand this Nigerian

government in the 1999 constitution as amended and national policies on education articulate education as basic right. This has implications for teachers particularly those teaching learners with learners with disabilities as he or she is require to use appropriate educational/instructional strategies in the classroom. Experience as confirmed by research has proved that prevalence of dysgraphia is seemingly under estimated due ignorant about the disability and lack professionals in Nigeria and no appropriate pedagogical strategies are used in meeting their instructional needs. The uniqueness of the disability and it manifestation requires strategies with research-based evidence of effectiveness to maximize the potential of the learners. Direct instructional approach, active instructional technique, and reciprocal instruction, task analysis among others with appropriate and reasonable instructional accommodations have been validated by Teedy (2016) as result focused strategies for learners with the disability. The author stressed that instruction should seek to address ergonomic difficulties, letter formation, spatial disorders in writing, and the general mechanics of handwriting. The ability of teachers to do this is based on training they receive thus; the need for their training programme to focus on this has become necessary.

4) PSYCHOLOGY OF THE DISABILITY

Every disability has its own challenges and psychological problems on the child and the family which requires therapeutic intervention for proper adjustment and integration into the school as well form the basis to benefit from education and others services. Dysgraphia has been ranked third as the most frustrating disability with high risk of psychological problems (Ozaji, 2005). The author points out that children with the disability often have poor grades which may translate low academic achievement not because the lack knowledge in the content area but because instructional process and the mode response in assessments in schools pose a challenge them particularly in the absence of the use of instructional accommodations. This result into many

problems like internalized anger, externalized aggression, frustration, anxiety, mood disorders, depression, conduct disorder and eventual drop out from school.

Teachers need to understand how children react or cope with this disability and stages of adjustment they passed through so that they can appreciate and be empathetic in the provision of educational and therapeutic services as well as make referral where necessary. Furthermore, they also need to educate and help parents come to terms with reality of their child's disability especially with dysgraphia co-exist with other special needs conditions. This is one of the reasons why in special education intervention targets both the child and the parents who may act as teacher at home, all these responsibilities on the teacher requires adequate professional training for provision of quality education to learners with dysgraphia in Nigeria.

5) HUMAN RELATIONSHIP

This is the ability to work with relevant professionals and Para-professionals for the provision of services to clients with disability. This is an essential aspect of special needs education practice as the needs of primary stakeholders (those with disabilities) cannot be adequately met by one professional or profession. This has become very important as special education teacher does not work alone but deals with others teachers, professionals and learners with special needs in inclusive school system where all learners are expected to receive meaningful education together however, with modification and adaptation where necessary. On the basis of this the ability to work with others collaboratively and co-operatively become necessary, in practical terms teachers capacity to work with learners, parents, members of school community and most significantly other professionals and supportive staff is a determinant of his or her effectiveness. As noted by Valenta (2006) working with a child with disability requires understanding of the child and a complex team of specialists such as Doctors, psychologist, social workers, parents,

developmental therapist among others. Particularly relevant to teaching and providing other services for learners with handwriting disability requires the tandem of psychologist-special educator, occupational and physical therapist, they work together to provide services for the clients. As specialist in specific learning disabilities generally and in dysgraphia particularly there is need to understand core and fundamental principles of collaboration such as parity, reciprocity as well understand professional boundaries to avoid conflict of role in dealing with the child and his/her disability. This is important because, such understanding goes a long way to preventing professional and personality conflict which in most cases is always the source of human relationship and intra-professional problems. Working with parents requires patients as they are part of team especially when educating them on adjustment process/ strategies to cope with their child's disability and conducting interview to verify information that will improve the teacher instruction. To adequately prepare special education teachers to meaningfully provide quality education for learners with dysgraphia in the school system in Nigeria their training should also focus on how to manage personal and professional relationship with others.

6) CURRENT TRENDS OR INNOVATIONS

Dysgraphia as a special needs condition like other aspects of special education require integration of current trends in pedagogical process because of the principle of dynamism and research findings. In Nigeria ICT in the last 10 years has gained recognition as integral part of teaching-learning process, considering its influence in instructional process, assessment and instructional accommodations. The use ICT as innovative trend is not just necessary but it is essential that teachers should be exposed to their application in education right from their training programme. Particularly important in education of learners with dysgraphia is the use of technology based instructional accommodations. This may have become part of educational practice or system of

developed countries many years ago it is relatively a new trend in developing country like Nigeria. It is therefore instructive that teachers for this category of learners should be properly trained and informed about application ICT in instruction, assessment, communication etc from the point of their professional training in the university or college of Education. The acknowledgement of this by the national policy on education is timely and right step in the right direction to improve instructional process and demonstration of acquired knowledge and skills by learners (NAEC, 2015, Ajuwou, 2012). Presently, the application of robot in the classroom for special education services is gaining prominence in many parts of the developed world such trend should be included in the specialized and professional training for special education teachers in Nigeria as they cannot afford to be left behind in innovation for improved educational practice (Lynch,2013). Online training programme have become part of well developed educational system in the world and has proved to be effective tool in meeting the training needs of the society and school. This should be integrated into the categorical and non categorical approach currently practiced in most universities and other higher institution running special education programmes in Nigeria. This will be an opportunity for teachers /students to access training programme from the comfort of their offices and home without losing the sense and concept of professional training and development. Closely related to this is the blended learning strategy where there is provision for combining both online and traditional classroom methods which requires the normal physical contact of teachers and students almost on daily basis. This is also known by different terminologies such as hybrid learning, web-enhanced instruction and mixed-mode of instruction (Poonam & Prajna, 2016). This widens the opportunity for training as there are options to explore depending on the teacher personal schedule, affordability and level competency to explore digital resources needed for training. Researchers like Mustah and Sandra

(2015) opined that blended learning strategy has high levels of trainee achievement more than the traditional classroom as it reduces educational expenses, saves time and it is self-paced, therefore it should be part of 21st century teachers' professional or specialized training programme.

Response to intervention (RTI) is one of the educational models that should be emphasized in teachers training programme as it has both instructional and assessment value in education of learners with specific learning disabilities. As a pedagogical strategy research has validated its application because instruction is systematic and it is based on collection of data on a continuous basis as input into the instructional process. This helps to screen learners based on their response, that is learning outcome which determines their eligibility for placement in any of the three-tiered instructional model which begins with tier or level 1 (inclusive education classroom) and progresses to the second tier (group intervention) and third tier or level 3 (intensive intervention) where IEP and ongoing accommodations and other very substantial services are provided for the learner to be able to function in school and at home. In assessment practice any child who requires service beyond the first level is likely diagnosed as having learning disabilities with different severity and is placed on special intervention and IEP with relevant services. The effectiveness of the RTI depends majorly on the ability to collect and use data from the instructional process with the learners (Edward, n.d). This model approach to assessment avoids the "wait to fail" associated with the discrepancy in academic achievement model and provides timely intervention.

7) POLICY AND LEGISLATION

International and national policies have shaped all aspects of special needs education practice in Nigeria. Specifically, global ones like Education for All (EFA), Inclusive Education (IE), Sustainable Development Goals (SDGs) among others have become reference points for national educational policy, this is evident in the Universal Basic Education policy currently implemented

in Nigeria as it was designed to reflect the mandate of global policies with due consideration to national needs and aspirations. Teachers in training need to be exposed these policies to enable them appreciate and align them with their professional practice in and beyond the classroom. For instance, a proper understanding of inclusive education policy will inform the teacher beyond doubt the need to see and teach learners based on their needs within inclusive setting rather than using one size fits all approach. Also important to be stressed and included as part of teachers' professional training programme is global and national legislation, this is imperative for many reasons particularly because education is one of the fundamental human rights that can be traced to United Nation Charter on Human Right of 1948 and other land mark legislation like UN Convention on Rights of Persons with Disabilities, 2006, Standard Rules on Equalization of Opportunities for Disabled Persons 1995 and the popular IDEA in America that is most referenced in Nigeria (UNESCO,1996). Knowledge of legislation on special needs education is very necessary as they act as input for advocacy for national laws on special education in Nigeria as there is such law that be cited to support education of children with disabilities including those with dysgraphia in the country. The relevance of laws on special needs education in developed countries is seen in the level of development in the field in areas like funding, research, assistive technology, health, education and other critical aspects like the use of instructional accommodations. The implication of these laws is that neglecting or denying the child opportunity to access any service means breaching the law which has consequences for the offender and boost the provision of quality services for those with the disability.

It is true that the development in ICT gives access to a wide range of e-resources on disability but they do not substitute formal and rigorous training that leads to professional competence,

specialization and certification to manage dysgraphia. This disability affects both the process of writing and the product causing concern for the child, parents and the teacher therefore it is essential for teacher to be formally educated on many areas such as spatial characteristics of hand writing, ergonomic factors, handwriting evaluation strategies, motor development, etiology, and other professionals to collaborate with. According to Gray (2017) teaching hand writing is more than writing letters; it involves guiding the child from the posture, paper position, pencil grip, letter formation and spacing. He grouped writing instruction into three components;

1. Execution which involves teaching student how to hold pencil and forming letters using correct stroke with appropriate air time. Teaching and providing opportunity to practice prevent formation habits that lead poor hand writing skills. This also includes the posture and positions for different writers.
2. Legibility is the formation of readable letters with appropriate uniform size, spacing between letter and word in a sentence. This leads to the readability of the written sample. To be able to do this the child must be made to understand the rudiment in the execution. while is normal that emotions may sometimes affect the product it is better for student understand the mechanics that leads to legible written sample.
3. Speed is the proficiency, fastness and fluency of written product. During instruction learners need to be taught that speedy is necessary in writing especially in dictation however, learners should master the basis before considering how to use and maintain the require speed in writing.

Considering the above it is imperative for teachers to be specially trained and certified competent for handwriting instruction in schools. Umar (2009) study on implementation of Universal Basic Education (UBE) curriculum in Nigeria and report that hand writing instruction is disappearing from school because they are no specially trained teachers to handle the subject consequently

those with the disability not carried along in UBE programme and the curriculum on hand writing is not been implemented. The study also revealed that in the 60s when it was part of teachers training programme there many trained teachers who could provide the require services in schools. The study recommended that teachers should be specially trained to teach learners who are already identified as been dysgraphic and teach others the art of handwriting to prevent the disability.

There are two major approaches to specialized training to teach learners with special needs in Nigeria, the categorical and non categorical approach with a teaching subject. Categorical type of training entails that those who are being trained have opportunity to choose the category special needs to specialize with a teaching subject this is the approach used in University of Jos, Ibandan and Federal College of Education Oyo (special) all in Nigeria. This approach produces teachers with Nigeria certificate in Education (N.C.E), Bachelor (B.Ed), Masters (M.Ed), and Doctor of philosophy (PhD) in specific learning disabilities who equip with skills to diagnose and teach children with dysgraphia. The non-categorical expose special educators in training to all areas of exceptionality with a teaching subject as in Department of Special Education University of Calabar however, at postgraduate level a categorical model is adopted to give opportunity to specialization. The structure and the content of the programme in each institution is design to meet the immediate and long term manpower of the society and the increasing school population. In the area of specific learning disabilities few departments focus on dyslexia due to it high prevalence in the society and the public misconceptions that hand writing disability is not a disorder but laziness of the child. The increase in awareness on dysgraphia as disability is changing the pattern research and training from being lobe sided in favour of dyslexia to a balance view about specific learning disabilities.

Osurji, (2013) studied post training competency of teachers in public schools in Jos metropolis, Nigeria and findings revealed that teachers whose formal training was in specific learning disabilities were more competent in teaching learners with dysgraphia. The result further shows they were able to educate parents on the need to embrace current trends in the education of children with handwriting disabilities. This point out the fact ability to write is skill that does not develop automatically it must be taught in school just like reading skill. Another research conducted by Ogbonna (2015) assess the relationship between teachers specialization and use of technology accommodations in special schools in North central Nigeria, the result indicated a strong positive correlation which means that specialized training is necessary in meeting the instructional needs of learners with handwriting disorder. In a related study, Learning Disabilities Center Jos (2013) survey teachers' performance in inclusive schools in North East Nigeria and found that teachers without formal and specialized training in specific learning disabilities were not able to identify characteristics of dysgraphia and differentiate learning needs of children with these disabilities. This implies that learners are excluded from the learning process. This also indicates that there was not adequate teachers' preparation for the diverse inclusive school population. Further assessment of special education teachers in the zone shows that teachers who specialized in visual and hearing impairments and had no adequate knowledge about dysgraphia and how to teach such learners. In America specialized training is emphasize to equip special education teachers to work in different settings and with special needs children. University of Oregon College of Education like most universities in USA runs a robust special training in the Department of special Education and clinical sciences which provide skills in early intervention, special education for teachers' in K-12, post secondary, transition and other community settings. Their programme focus on theory and practice to expose teachers to real experience of working

with children with special needs including those with dysgraphia in their classrooms (University of Oregon,2016).

In the past decade the influence of technology on education generally and in special education particularly has become more evident in their practical application of devices as compensatory and accommodations tools to learners with special needs. This invariably buttresses the need for special educators to be proficient in use ICT tools in their classroom. For instance, teaching learners with dysgraphia requires the use of a digitalized system of handwriting assessment to complement the traditional methods due their reliability error. To be able to use digital computer based method special training is necessary for the teacher. Georgia Department of Education (2010) study on assistive technology for exceptional students reveal that the use of technology requires specialized training and specialization because of the complexity of some of the devices and the nature of most disabilities. This is very true about technology for students with handwriting disability because the disability affect the organization, mechanics, grammar, spelling and legibility of written samples. Teachers need to support learners in using these devices to increase efficiency, productivity and independence. This becomes very necessary when learners need a combination of these devices to meet their writing needs in school and at home. The use of these technologies need trained skills to be used as instructional accommodations for required writing tasks in different instructional setting and this can only be provided if the teacher is trained.

2.5 Teachers' attitudes towards instructional accommodations

The concept of attitudes in special needs education is as old as the field of study and persons with disabilities. The ever existing relationship between this concept and the provision of education and related services to learners with special needs has been a focus of many researches. Attitude is a psychological construct that determine one's response to something, event, situation or a person. It is an individual disposition characterized by belief, though, and emotion or feelings to an object. Teachers' attitude towards the use of instructional accommodations in simple terms is their dispositions towards the concept of accommodation in teaching learners with dysgraphia. Teachers' attitude on this variable is not different from the attitudes of the Nigerian society towards special education and its clients. In Nigeria, teachers' attitudes evolve along the developmental stages in special education (extermination, sanction, vocation, and education). Ikpaya (1998) posits that attitudes of teachers and special education changes on the same direction. Ozoji (2005). reports that attitudes of teachers are either traditional or scientific, traditional attitudes in the study is characterized by the belief disability is reward of punishment for wrong doings of parents and so they should be left alone to pay for their evil deeds while scientific attitudes acknowledges that disability is product of many factors that can be proved by science. This rule out the influence of superstition as determinant for provision of education and social services and accommodations. It is important to note that while majority of Nigerian teachers' attitudes has changed from traditional to scientific some learners with hand writing disability in rural schools still experience difficulties coping with their education due negative of some teachers.

A study on teachers' attitudinal pattern in Nigeria by Ewa (2006), Bryang, Melody, Lysandra and Timothy (2000) identified four categories of attitudes, attachment attitude, concern attitude, indifference attitude, and rejection attitude. The findings reveal that each of these categories has

implication for all types of exceptionality. Teachers with attachment attitudes show sympathy, pity and feel sorry for learners with disabilities including dysgraphia. They are prompted by their moral obligation to do anything to help them succeed. Those with concern attitudes express a high degree of empathy and sense of commitment to disability issue including the using accommodations strategies to unlock the curriculum and instructional process to learners. They seek for opportunity for to ensure that their education and related services are provided for in the national legislation. Teachers with indifference attitudes are not interested in anything that special education and their clients. They can best be described as being neutral, while teachers' rejection attitudes out rightly shows that their negative feelings. This is expressively manifested in their opinion that handwriting disorder is the laziness of the learner and should be handled by the child or parents. More so they do not support the use accommodations for either to learn or for assessment due to their misconceptions of the philosophy of academic accommodations.

Researches on teachers' attitudes in Nigeria have found that they either have positive or negative. Adebayo (2015) survey teachers' attitudes towards the use accommodations during national examinations and found that 36% consider the use of technology based accommodations as inappropriate practice that lower the standard and validity of the examination while 64% support the use of any accommodations that can reduce the effect of disability on the examinee. The study further indicate that teachers who support the use of accommodations during assessment teach and encourage parents to allow their children access to accommodations as it does not make a child inferior to his/her peers. To categorize the attitudes of teachers as shown in result of the study above, 36% have negative attitudes while 64% have positive attitudes. This implies that there is positive trend in Nigeria on the use instructional accommodations. However, concern that should be addressed is objectivity in grading assessment done with accommodations and affordability of

technology based accommodations. More so, in rural schools in Nigeria where majority of learners need these accommodations they are no teachers who are literate on technology accommodations that can integrate them into their classroom instructions. Yusuf and Balogun (2011) studied attitudes of student-teachers' towards ICT integration in the classroom instruction for dysgraphic learners found that there is positive attitudes towards the use of ICT tools that help in communication and learning process . The study also shows that there is no significant difference between male and female teachers' attitudes in the use ICT base accommodations, both students and teachers are excited to use such technology.

Avramidis and Norwich (2010) studied teachers' attitudes towards inclusionary practices and found that their attitudes were positive but is strongly influenced by the nature, severity of the disability and availability of accommodations tools as well support services. It equally indicated that teachers' variables like age, gender and socio-economic status does not influence their attitudes. The implication of the findings is that teachers are ready to use accommodations devices to help learners participate in any learning activity if the degree of the disability is not profound and legal, parents, technical services are available to make the system work effectively. The legal service takes care of any issue arising from the law, parents are educated on the benefits of accommodations and the technical service repair devices that could become faulty and malfunction.

2.6 Teachers' utilization of instructional accommodations

The use of accommodations for instruction and assessment has become very important component in education of learners with disabilities including those with dysgraphia in both developed and developing education system. The UN Convention on Rights of Persons with Disabilities (2006)

entrenched the right to use accommodations to access quality education and equalize opportunities.

To realize these states parties shall ensure that:

- (a) persons with disabilities are not excluded from general education system on basis of disability
- (b) persons with disabilities can access inclusive, quality and free education at all levels on equal basis with their peers in the community where they live
- (c) reasonable accommodations of individual's requirement is provided
- (d) Persons with disabilities receive the support required within the general education system to facilitate effective education.

In line with the above convention many countries in including Nigeria have complied with these provisions, some have enacted their national legislation to enforce compliance. Where there is no legislation policy is formulated to ensure implementation the use of accommodations in their education. Bolt and Thurlow (2004) research has shown that accommodations policies varies with states and disabilities and approximately two-third of teachers and exceptional students including those are dysgraphic use accommodations.

The National policy on education in Nigeria made provisions for the use of accommodations to reduce the impact of disability like handwriting disability on instruction and assessment. This policy is a guide to stakeholders in education including teachers consequently they are expected to implement the policy to the extent that it is possible (FGN, 2006). Additionally, others reasons for teachers utilization of accommodations as articulated by Lere, (2009) includes;

- ❖ To prevent discrimination from quality education on basis of disability
- ❖ To encourage active participation in all learning activities and assessment
- ❖ To reduce the level of frustration in the education of learners' with handwriting disorder

- ❖ To create a level playfield for learners with this disability to demonstrate the level their mastery in any content area.

Accommodations are generally used in four categories, presentation, response, time schedule and educational ecology setting. It is important to point out that due to misconceptions among some stakeholders accommodation like the use of scribe or peer writer is not common during assessment to guide against cheating. Ajuwon (2012) studied the use of accommodations in Nigeria and found out that it is a common feature in instruction of any child who is accredited by the school and it is mostly use for classroom activities. It further noted parents' concern in the use of technology base accommodations that require electric power supply due to lack of constant supply of electricity in most homes and schools. The findings equally shows that teachers' frequently use audio devices to record summary note that the learner should have copy form the chalkboard or projector, allow peer writer, and other form of accommodation for presentation of instruction. Adebisi, Liman, and Longpoe (2015) study on using AT in teaching children with learning disabilities in the 21st century, found that AT such as spelling checkers, speech synthesizers, speech recognition and grammar checkers are used with learners who have written language problem as accommodations devices. The study shows that these devices help learners to spell words correctly, produce grammatically correct written sample, convert speech to text and reduce the functional limitations of dysgraphia on the learning process. This study as in Liman, Adebisi and Jerry (2015) confirmed the value of these technologies to the teach-learning process but expressed concern on the availability of internet services and quality devices in developing countries like Nigeria. Teachers in Nigeria appreciate that challenge impose by dysgraphia as functional limitation that inhibits the child ability to express what he/she knows in writing and are poised to use multi-modal strategies to present their lessons by providing opportunities for dysgraphic to make oral response where it

is traditionally accepted to provide written answers or responses. The use of YouTube video technology is one of the accommodations which allows learners to have multi-sensory access to instruction. For learners with handwriting disability it offers them the opportunity to use the content without necessarily copying it in the traditional way in their exercise books. This accommodation is the most frequently used because it is relatively cheaper as most parents can afford to buy various devices that can allow their children access to learning materials effectively and at will. Research conducted by Orim (2015) survey challenges of classroom accommodations revealed that apart from the issue of digital divide teachers complain that administering accommodations is time-consuming as most materials need to be converted to electronic format for the students. It was also discovered that it costs a teacher a great deal beyond the required limit to properly use accommodations either during instruction or assessment. For accommodations to yield the desirable result, teachers should ensure that they are used in line with professional and global best practices which include but are not limited to the following:

1. Parental consent and involvement in the accommodations decision process.
2. It must be developed and recommended by the IEP or the school.
3. It must be periodically evaluated to measure progress.
4. It must be properly documented in line with prevailing legislation or policy.
5. It is not forced on a child, he or she reserves the right to choose from options.
6. It does not give an advantage to users in assessment but gives access to participate effectively in all academic activities.
7. It does not water down the accepted standards of the curriculum and assessment.

In Canada, accommodations in the four categories are used by all students with disabilities in compliance to the Canadian Charter of Rights and Freedom and the New Brunswick Human Rights Act. NBDEED (2015) reports that reasonable accommodations for students with special needs those with dysgraphia inclusive are use unless it is convincingly proved that it constitute undue hardship, cost, risk to health, as well as impact on others negatively. This means that refusal to use accommodations is an offence and discrimination against the learner who is qualify by law. Shrinner and DeStefano, (2003), found that the challenges of educators and parents face is to decide which accommodations that will best help the child to learn new skill and demonstrate it when is necessary. In addition to the principle of universal design for learning, Education Support Service (ESS) team posits that the following questions should be taken into consideration in choosing justifiable accommodations:

1. What accommodations does dysgraphic prefer
2. What accommodations will increase the learner participation in learning activities
3. What is the nature of the task to be learnt or perform
4. What conditions are needed to use the accommodations at home
5. How can accommodation(s) be evaluated to monitor progress

Research has also shown that the use of accommodations for instruction and assessment is an essential part of the child' IEP in America however, each state has its own law and manual that guide the process and administration of accommodations. A survey of the different states policy and legislation revealed that the four categories of accommodations are appropriately used during instruction and state wide assessment by learners with hand writing disability. (Special Education Unit, Arkansas Department of Education, 2005) note that student is allowed accommodations on

response which is the most critical problem of dysgraphic that do not change that construct of what is being assessed. It also confirm the use of accommodations on time schedule such as extra time, frequent breaks, multiple days and private room for accommodation on setting for the use scribe. The Alberta Teachers' Association (ATA) appreciates the effect of disability on learning process especially on assessment however, pointed out the intent of accommodations is not to give advantage or optimize performance but to provide level playing ground for all to participate in every academic activity in school and at home to the extent of his ability.

2.7.1 Conceptual review of dysgraphia

Hand writing is one of the skills necessary for success in school and in life generally. This is due the fact that one is face with situations that require the use the skill either in a formal or informal way. In school most of the learning activities such as copying or writing notes, taking examinations and writing essay in a choice topic require the skill. Hoorn, Maathuis, and Hadders-Algra (2013) report that 30-60% of school day activities of children is devoted to fine motor and writing as predominant task. While most learners may find this easy few with handwriting disability find any task that involves writing very difficult. Epistemologically, the term dysgraphia comes from a Greek word “*dys*” meaning impaired and “*graphia*” meaning writing with hand. Thus, learners who have difficulty writing with hands are said to have impairment in writing. NCLD (2014) conceptualized dysgraphia as a disability that affects the development of complex motor and information processing skills required for written language. National Center for Learning Disabilities recognizes that hand writing involves more than formation of letters on a paper. It encompasses the development of visual spatial skills, motor skills and language processing skills. Visual spatial skills are needed to differentiate letters, understanding of spacing between letters and words, fine motor skills are require for proper pen or pencil grip and language processing skills

determine what and how your ideas or thought are express and written down meaningfully. APA (2013) sees the disability as difficulties in written expression that is characterized by multiple grammatical or punctuations errors within sentences, poor organization of paragraph and lack of clarity of ideas. This affects writing skill substantially and quantifiably below the person's age, education and interferes significantly with the academic, occupational performance, and daily living activities. This definition is seemingly inclusive in terms of different settings where legible hand writing is very important. As noted earlier, hand writing is skill that anybody uses on daily basis because the shortest pencil is better than the longest memory. Despite the influence of technology there are activities that still require pen and paper not Microsoft word or keyboard.

Legible handwriting is not an event but a process of development and training or teaching the child relevant skills. It is a complex process or task that involves in addition to factors such as visual-motor, visual perception, kinesthesia and development of writing readiness skills. Unfortunately, people think that the skill develops automatically as the child grows up this is why attention is focus on reading readiness skills without thinking about handwriting readiness skills that that could enhance ability to write. Learning hand writing must begins with building the fine muscles through different activities, to scribbling, pencil grasp, formation of letters, ergonomic factors, to speed and maintaining a balance among other hand writing variables that lead to readable product or sample.

2.7.2 Etiology and typology of dysgraphia

There are different perspectives to understanding etiology of this disability, some of these attempts are still hypothetical conceptualization while few others are confirmed theories that can be used to enhance explanation and knowledge about dysgraphia as a disability. Attempts have been made to prove that penmanship, emotions and handwriting instruction as theories to understand

underlying factors responsible for this disability but such studies have no adequate research base stand in the field so they are best seen as hypotheses that guides search for proper understanding of dysgraphia. However, few studies have lay credence to neurological theory, spatial deficit theory, visual-motor deficit theory and biological theory (Bender,2004). In addition to insight of these theories (Pilgrim, 2003) study reveals that disorientation causes handwriting disability. The author sees disorientation as an alteration in the perception and thinking process. When disorientation occurs the individual perception of symbols such as letters, numbers and word and the way he or she writes them is affected. The study further indicates that in a disoriented state, writing on the line, within the margin, spatial features of writing, movement and pen pressure changes. Similar studies report that confuse of letters and multiple mental pictures of letters, sequencing disorder, attention deficit, and auditory processing weakness causes dysgraphia.

Dysgraphia just like the mother disability (SLD) is heterogeneous in nature and manifestations. International Dyslexia Association-IDA (2000) and Kay (2007) report the following types of dysgraphia:

1. Dyslexia dysgraphia: Learners with this type of handwriting disability have spontaneously illegible written work. Their copied samples and finger tapping speed are fairly good but they have problem with spellings which is an indication that the deficit is not related or linked to cerebellar dysfunction.
2. Motor dysgraphia: This due to deficient fine motor skills, poor dexterity,poor muscle tone and unspecified motor clumsiness. Written samples either copied or self-generated are illegible, letter formations are irregular in size, and spacing. It takes learner with this condition unreasonable amount of time and effort to complete a short written activity due to impaired finger tapping skill.

The oral spelling of learners with this type is normal but they have problems with drawing activities. This is what the motor deficit theory establishes as the major cause of dysgraphia.

3. Spatial dysgraphia: It is defect in understanding that spacing between letters and words correlate legible handwriting leading to illegible spontaneously written samples. Both finger tapping and spelling skills are normal however, the learner has difficulties writing on the line, maintaining margin, spacing between sentences are abnormal especially when writing on paper without lines few sentences can cover space that will take one or more paragraphs.
4. Phonological dysgraphia: Phonological type of this disability is characterized by poor writing and spelling especially unfamiliar, non- word and phonologically irregular words. Learners with this disorder are unable to understand the relationship between phonemes and how there can be blend in appropriate sequence to produce a word. They are also not able to retain phonemes in their memory to facilitate decoding leading dyslexia and dysgraphia.

2.7.3 Characteristics of dysgraphia

Many learners with disability manifest varied characteristics in different setting depending on nature the task. In clinical assessment some diagnosticians use these characteristics as criteria for screening, referral and identification of the disability. The frequency and degree of their manifestation during writing task in school and at home is always consider among other variables depending on the purpose of evaluation. It is therefore pertinent for parents, regular teachers and other school personnel to be aware of these indicators. Crouch and Jakubecy (2007) observed both written samples and the students and found that following characteristics were common among dysgraphic;

- ❖ Cramped fingers on writing tools
- ❖ Odd wrist, body, and paper positions

- ❖ Excessive erasures
- ❖ Mixture of upper and lowercase letters
- ❖ Inconsistent letter formations and slant
- ❖ Irregular letter sizes and shapes
- ❖ Misuse of line and margin
- ❖ Poor organization of work on the page
- ❖ Inefficient speed in copying
- ❖ General illegibility
- ❖ Slow writing speed
- ❖ Inattentive to details while writing

2.7.4 Diagnosis and prevalence of dysgraphia

Dysgraphia as a handicap condition has both psychosocial and academic effect on anybody with the disability. Learners go through a lot of emotional trauma when teachers, parents and peers complain about their illegible written samples, they are times rated poorly due the difficulty of deciphering what has been written as answer to a question. This situation justifies the need for diagnosis of the disability and intervention. As critical as the need may be Knoblauch (2008), Obani (2006), report that diagnosis of the disability is quite problematic due lack of research, acceptable handwriting assessment tools and experts in hand writing evaluation. However, Lere (2009) posits that the use of self made instruments can be developed, validated and use in Nigeria. The author argues that standardized tools do not reflect the culture of Nigeria and learners socio-economic background. This implies that individual diagnostician could self design measures such as copied sample, dictated sample and self generated sample, self monitoring, survey and interviews to assess handwriting. It also means that dysgraphia can also be diagnosed by direct

observation of the child taking into consideration factors like sitting posture, paper position, pencil grip pen pressure and other criteria predetermined.

Dcempt (2010) identified the following methods as been widely used in handwriting diagnosis:

Global Holistic Evaluation Method

The global holistic evaluation is the earliest method developed to measure the overall outlook or general merit of a written sample ,it is basically interested in the readability as samples are collected and compared with standard group written products that has been adjudged readable or legible. It is a norm-reference method that involves grading of samples by a predetermined scale such as readable and unreadable. Emphasis or focus of this method is on the overall readability and legibility of written samples without specific analysis of each of features such spatial characteristics, letter formation etc as components of a good product. According to Rosenblum et al (2003), the Test of Legible Handwriting (TOLH), Hebrew Handwriting Evaluation (HHE) and Evaluation Tool of Children's Handwriting (ETCH) are mostly used to evaluate readability of products.

Test of Legible Handwriting (TOLH) was developed to assess the overall readability of children's samples in higher grade levels, it was originally known as Test of Written Language (TOWL). In this scale samples are graded from the least readable to most readable. The written product readability is graded and given a standard and percentile scores with child's mistakes being analyze by informal protocol. Practical application of this method has been reported to ineffective as a result of many factors which include psychometric properties and variability in mode of samples used as well as style of writing (Larsen & Hammill, 1989, Graham & Weintraub, 1996). However,

despite these issues the TOLH is significant as it provoke more research that led to improvement on the scale and development of other scales.

The Evaluation Tool of Children's Handwriting (ETCH) scale was developed by occupational therapist based on professional practice over the years primarily to evaluate readability of children product done in the classroom. The scale try to improve on other tools by making provision for two style of writing, the manuscript (print) and the cursive as represented by ETCH-M and ETCH-C (Amundson, 2011). The modes of writing used in this tool are:

- Copying, this mode requires the child to transcribe a text that has been written from different distances and points which may be from the board in the classroom or a passage from an approved text. In addition to evaluating the legibility of the copied product it is interested in visual-perception, fine motor skills as a critical component of handwriting. Bender (2004) study reports that task of copying rely heavily on visual-spatial skills and motor skills than cognitive and language skills.
- Dictation as mode of taken sample for evaluation require the child to write what is being dictated which may be a telephone message or direct dictation by the evaluator. This also evaluates other skills such as cognition and language ability of the child. It is important to note that this pose a problem to a child with spelling difficulties and attention can be shifted from readability components to spellings however, experienced evaluator will focus on the legibility criteria of the scale.
- Free writing style which is also known as writing from memory demands that a child is giving the free will to writing or compose sentences of choice base on the ability without assistance from any source. This mode task orthographic processing skill, cognition, and

motor skills. The child may perform this task using either upper or lower case letters depending on his or her preference.

The administration, scoring and interpretation of the results is based the instructional manual which will requires evaluators to receive training on its procedures for objectivity. Although this scale focus on readability features like spacing, shape, size etc it is necessary to point out that the mechanics of handwriting such ergonomic factors, in-hand manipulation and personal factors contribute to the overall legibility or otherwise of a product. Diekma, Deitz and Amundson (1997) and Sudsawad, Henderson and Tickel-Degnen (2001) noted that most handwriting evaluation scales like ETCH is subjective due to its psychometric properties and human factors.

Analytical Evaluation Method

As one of the conventional methods of handwriting evaluation, it is concerned with and pays specific attention to individual feature that characterized any written product such as spatial characters, letter formation, size, slant, height, alignment, ergonomic factors etc. This method believes that holistic readability of a written sample is a contribution of all these and so each component should be analyzed rather than focusing on only legibility of sample. In analytical evaluation a child may score high in readability and perform poorly in spatial character analysis. Rosenblum et al (2003) maintained that most handwriting evaluation scale developed in the last decade belong to analytic category where assessment is based on the specificity of readability components, most researchers agreed on specific criteria that form the focus of analytic evaluators. Some them include, letter formation, size, slant, spacing, line straightness, alignment, shape stability of pen stroke, consistency, air time, erasures, speed, fluency, ergonomic factors among others. These features are measured with a norm referred to as transparent overlays which is

predetermined, for instance if the size of a letter in the transparent overlay is within 1-3mm wide letters are to be evaluated and measure to see if they meet the performance measurement (Graham & Weintraub, 1996, Graham, 2010). Analytic evaluation scales that are common in the literature include for this method are:

- ❖ Rubin and Henderson Scale developed in 1982 for identification of handwriting difficulties
- ❖ Alston Evaluation Scale for handwriting assessment developed in 1983
- ❖ Children Handwriting Evaluation Scale developed in 1985
- ❖ Diagnosis and Remediation of Handwriting Problems (DRHP)
- ❖ Minnesota Handwriting Test
- ❖ Motor Assessment Scale (MAS)
- ❖ Concise Evaluation Scale for Children's Handwriting (CHSCH or BHK)
- ❖ The Hebrew Handwriting Evaluation.

The mode of children participation using these scales is the same as in global holistic evaluation method with psychometric properties problems re-occurring which is an indication that validity and reliability of evaluation scales remain a major challenge in handwriting assessment.

Technology Evaluation Method

As response to human factors and psychometric properties issues or errors associated with conventional methods of handwriting evaluation technology approach become not just necessary but imperative. The use of technology has not been very common mostly in developing countries however; Rosenblum et al (2003) note that one of the earliest application of technology in handwriting dates back to the 70s when Teulings and Thomassen evaluated handwriting process

of adults. Considering the potentials of digitization in hand writing evaluation, more studies and evaluations are now using different technology devices. Specifically, one of such devices is the Digital pen, this is an objective method of collecting data for evaluation and it has software that electronically record handwritten information and analyzes them objectively. There different are types of digital pens, digital pen with digital paper, digital pen with digitizing tablet, digital pen with memory unit. They capture many handwriting parameters based on their capacity and limitations. Digital pen with digital paper can only record what is written on digital paper but the one with memory records all text irrespective of paper (PLNiT OrganiZer, 2005). The analysis of frequency of using this type of digital pen shows that Pegasus Digital pen with memory unit is commonly used due to non sensitivity to the of paper and many handwriting variables such as speed, reasons, erasures, length, quantity, etc are assessed. The use and popularity of this device is as a result of its benefits or advantages over traditional methods. As noted by Mann, Hinrichs and Quigley (2015), digital pen technology has augment handwriting process and evaluation in different ways namely, it provide haptic feedback, fairly accurate data, detect errors, improved letter formation, recognition and increased phonological awareness in children as well as improve handwriting fluency in adults. Digitizer-computer method is another technology driven method of handwriting assessment, it is an electronic surface called digitizer that is capable of recording handwriting errors when in tandem with a wireless pen and personal computer (Vielhauer, 2006, Roberts & Samuels, 1993). This method records kinematic and kinetic variable as the writer engages in various types of writing tasks, detect errors and collect comprehensive results on dynamic or variables features of written sample. The result is comprehensive, objective and precise. This system evaluate the child during the actual performance and detect what the human eyes is not capable of discerning there by making is the evaluation process and result less

subjective. Digital technology open has new avenue for assessment of handwriting by providing reproducible and objective measures that distinguish between children with and without handwriting difficulties, kinematic variability can be measured using digitizer with an automated recording device and accurate evaluation of variability in the formation of letters. Depending on the technical capabilities of the digitizer device, some or all variability in features can be electronically registered, quantized and converted into digital representation (Rosenblum, Weiss & Parush, 2004).

Valenta (2006) recommend analysis of written product, drawings, case study, and Bender-Gestalt test on copying and Oseretzky scale on perception-motor to evaluate handwriting. It has been observed that handwriting diagnosis has its own challenges among the different scales and measures frequently used. These challenges ranges from reliability issues, lack of uniformity in the mode of performance among the examinee, lack of accurate interpretation of results and multiplicity of handwriting variables that form criteria for assessment (Faddy, McCluskey, & Lanin, 2008). Despite these challenges, handwriting diagnosis is very important as it is use to determine the recovery of psychiatric patients, personality of an individual, detecting crime in questioned documents, level of alcoholic content in the body, rehabilitation in occupational therapy and for provision of accommodations.

The emphasis on accurate diagnosis of the disability is due to the importance of reliable data on for advocacy, planning, education / intervention, research and comparison of prevalence of this disability within SLD in terms of gender, sub-types, comorbidity and with other categories of exceptionality. Prevalence in special education is the number of cases of a particular disability in a population, information on this is very cardinal as mentioned above. The task of getting accurate data on prevalence of this disability is quite a difficult one. Obani (2006) observed that despite

number of these cases in Nigeria no national and coordinated effort to have statistics on this disability. The need for successful implementation of inclusion, UBE and other policies has prompted number of studies on prevalence especially among the children within the school age in Nigeria. The author survey put the prevalence at 20%-30% among children in primary schools in south west, 15-26% among those in secondary schools. This shows that there is a decrease as the children mature into higher classes. Among children between ages 6-15 years which is still the age range for primary and secondary education in the country. The same study estimated the prevalence of adults within the age of 45-60 years to be between 10-28% in Oyo state public service. In another study Osurji (2013) screening on public schools in Jos North local government area in Nigeria to determine the prevalence of the disability by gender findings indicate that the ratio between male and female is 5: 2, the author concluded that males are more dysgraphic than female and attributed this the function of biological make up of the female. In America there are variations on the prevalence of the disability, Reynolds (2007) puts the estimate of this disability among students at 3%-20%, Overvelde and Huslstijn (2011) study among those in Elementary schools to be at range of 5-33%. This study also reveals that handwriting disorder decreases as the age of the student increases.

CHAPTER THREE

3 RESEARCH METHODOLOGY

3.1 Research design

The study adopted quantitative research methodology and Ex-post facto design. Quantitative research method is approach to research that involves gathering of quantitative data and depend on numerical value of the data for analysis and interpretation of results or findings while ex-post facto research design is a design that study how pre-existed conditions or independent variables present prior to the study effect the dependent variable. In this design the researcher has no control on the independent variables being study. (Mcmillan,2000,Marczyk,Dematteo,& Festinger,2005,Kowalczyk,2015).The choice of this design is base on the fact that independent variables such as teaching experience, knowledge and others have occurred in the population the researcher is only examining their influence on the dependent variable which is utilization of instructional accommodations.

3.2 Study Area

This study was conducted in Akwa -Ibom and Cross River state, Nigeria. The choice of these states is based on National Association of Special Education Teachers, NASET (2015) survey that indicates vulnerability of the states to the disability with 61% of school children having the special need. Also, Frank (2014), identified 66% n=98 of teachers misconceived and understood handwriting disability and uses of instructional accommodations while only 34% n=51 teachers have properly understanding, thus, NASET and ministry of Education in the two states declared the area a research focused zone.

These states are part of the Niger Delta Region in south-south geo-political zone of Nigeria. They were formally political and administratively one state until September 23rd 1987 when Akwa-Ibom state was created by General Ibrahim Babagiada led administration. Akwa-Ibom state is located in the coastal southern part of Nigeria, lying between latitude 4^o 32' and 5^o , 33' North, and longitude 7^o 225' and 8^o 25' East. It is bordered on the East by Cross River state, on the west by Rivers state and Abia State and on the south by the Atlantic ocean with an estimated population of 5million people (AKWS,2012). Politically, it has 31 local government areas, three senatorial districts with Uyo as the state capital. The major ethnic groups in Akwa-Ibom are the Annang, Ibobio, Oron, Eket and Obolo, political landscape is dominated by the first three ethnic groups. The state is economically viable as it has arable landmass of 6,900km, constant rainfall almost throughout the year which supports extensive agricultural activities and cultivation of crops such as cassava, yam, palm produce, waterleaf, timber, plantain among others. It equally has rich mineral deposits like oil and gas on both on and offshore exploited by ExxonMobil, Elf and Addax company. The people of Akwa-Ibom are involved in different occupations such as farming, fishing, trading, and wood carving (Essien,1995, Enete & Okon, 2010). To boost the economy 12 higher institutions ranging from school of Basic studies to University of Uyo are established to produce both middle and high level manpower.

Cross River (The people paradise) is a coastal state in south-south geopolitical zone of Nigeria, occupies 20,1556 square kilometers and share boundaries with Benue State in the North, Ebonyi and Abia State to west, to the East by Cameroon Republic and in the south by Akwa-Ibom State as well as Atlantic Ocean. It was created out of former Eastern Region of Nigeria in May 27th, 1967 by General Yakubu Gowon Regime. It is located in latitude 5^o 45' north and longitude 8^o 30' east with population 3,866,296 (National Bureau of Statistics, 2017). Politically, the state has

18 local government areas, three senatorial districts with Calabar as its Capital and many ethnic groups like the Efiks, Quos, Ejagham, Yakurr, Bette, Bekwarra among others. The rich cultural heritage and festivals include, Calabar carnival, the Yakurr Leboku Yam festival, and Calabar Boat Regatta.

The state is rich in solid minerals like limestone, oil and gas, arable landmass that enhance her agricultural potentials which produce both cash such as, cocoa yam, groundnut, few banana, timber, cocoa as well food crops like yam, cassava, and plantain. The people of Cross River are mostly farmers, fishermen however; few are involved in trading. The economy is enhanced by her tourism potentials such as Tinappa Business Resort, Calabar Marina Resort, Calabar slave park, Obudu Ranch Resort with the longest cable car, Agokim waterfalls and Cross River National Park.

3.3 Population of the study

The population of this study consisted of all special education teachers in the schools. The total number of teachers in the schools is 169 specific details of each school is shown in the table 1 below..

Table 1. Shows population of teachers in each school

SN	Name of school	State of location	Population	Sample	%
1	Special Education Center, Calabar	CRS	25	20	80
2	Good Shepherd special School, Ogoja	CRS	15	10	66

3	St. Josph Center for Visually Impaired, Obudu	CRS	20	15	75
4	Daughters of Charity, Uyo	AKS	28	20	71
5	St, Louis special school, Ikot-Ekpene	AKS	30	25	83
6	Special Education center, Uyo	AKS	51	30	58

Source; AKS MOE, 2015, CRS SEB, 2016.

3.4 Sample of the study

The participants in this research consisted of 111 (92.5%) special educators who are working with children with specific learning disabilities and may have attended conference/workshop on special education with relevant themes organized by professional bodies, National Association for Exceptional Children and National Association of Special Education teachers (NAEC, NASET) in collaboration with ministries of Education or any other organizations. These conferences/workshops must meet National minimum standard set up by Ministry of Education, Nigerian Universities Commission (NUC), and National Commission for Colleges of Education (NCCE) National Board for Technical Education (NBTE) and professional regulatory council such Teachers Registration Council of Nigeria (TRCN).

Descriptively, the sample was made of 52 (47%) male, 59 (53%) female teachers out of these 17 (15%) are N.C.E holders, 44 (40%) have B. Ed, 34 (30%) hold M. Ed, 13 (12%) are MA holders and 3 (3%) have PhD. In terms of teaching experience 33 (30%) have 0-5years, 32(29%) have 6-

10 years 46 (41%) have 11 and above years of teaching experience. This is further presented in the figures below:

Figure 1 & 2 pie chart shows the % Respondents' Educational qualifications and Gender

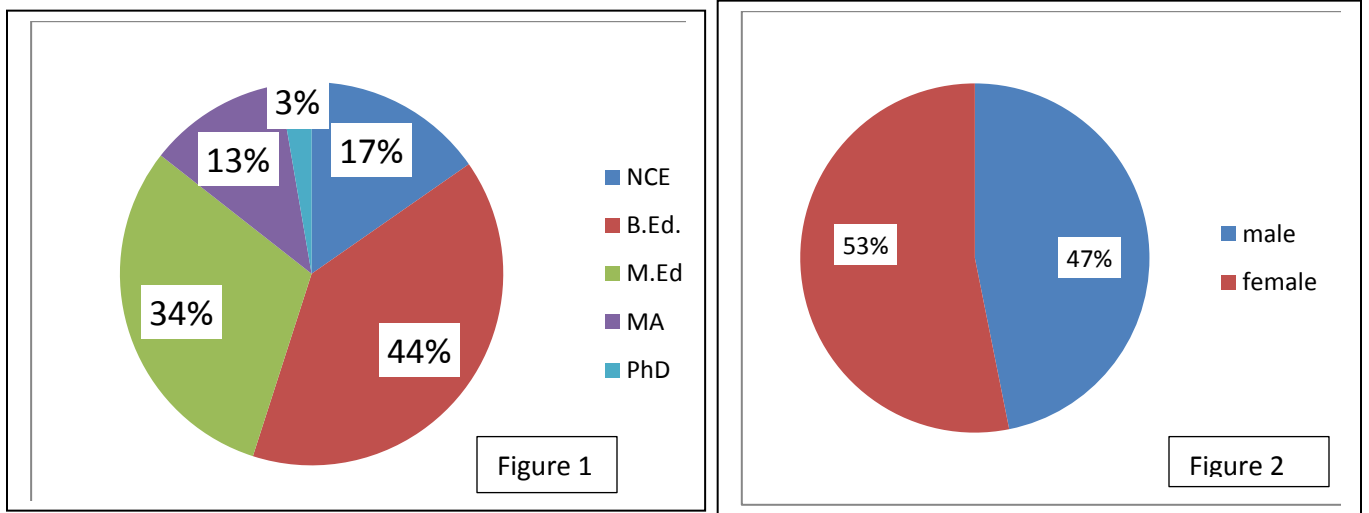
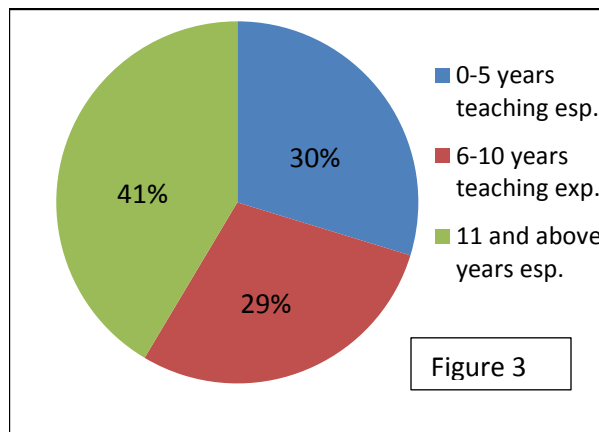


Figure 3: Shows teaching experience of the participants



3.5 Sampling Technique

The researcher used purposive sampling technique, this is use to select participants who are knowledgeable and well informed about the subject matter of the research. (McMillan, 2000). In this method the researcher use his/ her judgmental knowledge about the participants to select those who will be able to facilitate the investigation. Among the different types of purposive sampling, expert sampling is the most appropriate for this study. This involves the use of participants with specific expertise, knowledge or idea on what the researcher is interested. The main purpose of purposive sampling is select sample that can generate valid data useful in answering the research questions or test the stated hypotheses (Ray, 2012, Palys, 2008). The choice of this technique is base on the wealth of their knowledge of special education particularly dysgraphia and the subject matter of the research which is instructional accommodations.

3.6 Instrument for data collection

Three instruments were used for data collection in this study, they are:

A. Questionnaire. This was design by the researcher, Questionnaire is a written statement that contains questions use to solicits responses from participants on variables being study (Conrad & Kreuter,2017).This study used close ended questionnaire tagged questionnaire on teacher utilization of instructional accommodations in teaching learners with dysgraphia (QTUIA). Structurally, it was subdivided into two part A & B part is concern with personal data of the respondents while the B part consist of 60 items that covers variables under study. The response scale for item 1-49 was strongly agreed (SA= 5),agreed (A= 4), undecided(UD=3)

disagreed(D=2) and Strongly disagreed (SD =1) from item 50-60 was Never (N= 1), Occasionally (OC =2),Sometimes(ST=3) Often(OT=4),Always(AL=5).

B. Interview. Interview is method of data collection in qualitative research which involves meaningful and purposeful interaction between the researcher (interviewer) and the respondent (interviewee) through question and answer primarily to generate data that will be used to answer research questions or test hypotheses. McMillan (2000), DeMarrais (2004) defined interview as a process in which a researcher and a participant engage in conversation focused on questions related to research study. These questions usually ask participants for their thought, opinions, perspective, feelings, specific experience etc. on the subject matter of the research. It is often oral questions from the interviewer and answer from the subject which may be recorded verbatim.

The study used guided interview with open ended questions, this is to keep the interview within the research questions or hypotheses and allow the respondents opportunity to freely provide answers based on knowledge and experience without choosing from options.

Selection and number of participants: Criteria based selection was used to choose principals/Head teachers of the sampled schools. Two principals and Head teachers from each state (8 participants) who meet any two of the following criteria were selected for the interview:

1. Principal or Head teacher of the samples schools at the time of this research
2. Professional in special or general education
3. Taught for at least more than five before becoming principal or head teacher
4. Fair knowledge about the subject matter of research (accommodations for persons with disabilities).

Mode of the interview: The study used in-person, email and telephone/skype where applicable; this is for the convenience of the respondents. A minimum duration for the interview was one and half hours.

Procedure for the interview: In addition to a letter of introduction, formal request and approval for permission and opportunity to conduct interview with the principals and Head teachers was sent to them through the Ministry of Education in the respective states and schedule for the interview was sent to each participant one week before the commencement of the interview. Consent form was directly sent to participants to enable them consider their voluntary participation. This is to ensure the participants are not force, are prepared and to prevent interview from not holding as scheduled. The interviewer was asked major questions covering the five objectives of the study however, fellow up questions may be asked if the need arises. The interview was recorded and notes taken by an assistant interviewer where necessary. However, this was subject to the approval of the interviewee.

Reporting result of the interview: The data from the interview was descriptively and qualitatively (use of words) reported to support and complement results collected through questionnaire that was analyzed quantitatively. The views of the respondents were quoted verbatim where necessary to back up result from questionnaire.

C: Questions for evaluation of teachers' competence in instructional accommodations for learners with dysgraphia (QETKIALD): This consists of 10 self designed items that cover basic areas on knowledge about the concept and practice of instructional accommodations. The instrument had four response scales of strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD).

3.7 Validation and reliability of the research Instruments

The Cronbach Alpha reliability method (internal consistency) was used to establish the reliability of the instruments for this study. Questionnaire on Teacher Utilization of Instructional Accommodations (QTUIA) in teaching learners with dysgraphia and Questionnaire on Evaluation of Teachers' competence in Instructional Accommodations for Children with Dysgraphia (QETCIALD) were administered to 20% of the sample (24 participants) consisting of special educators who are working with children with specific learning disabilities and have attended conference/workshop on special education organized by professional bodies, such as National Association for Exceptional Children (NAEC) and National Association of Special Education teachers (NASET). These participants were purposively sampled from the States. These were not part of the population of the study. The instruments were administered and retrieved within one week. The responses were coded and analyzed using SPSS (Statistical Package for Social Sciences) and using Cronbach Alpha reliability method. The analysis of QTUIA and QETCIALD produced reliability coefficients ranging from 0.79 to 0.88 as shown in the tables below.

Table 2a: Summary of the reliability coefficient of QTUIA and QETCIALD

S/No	Variable	N	Cronbach's Alpha
1	Teaching experience	24	0.85
2	Teachers' knowledge on instructional accommodations	24	0.83
3	Teachers' participation in conferences/workshops	24	0.88
4	Teachers' specialized training	24	0.86
5	Teachers' attitudes towards instructional accommodations	24	0.79

Table 2b : Summary of the reliability coefficient of Questionnaire on Evaluation of Teachers' competency on Instructional Accommodations for learners with Dysgraphia (QETCIALD)

Variable	N	Cronbach's Alpha
Evaluation of Teachers' competence in Instructional Accommodations	24	0.81

This method was used because it does not give the subjects opportunity to transfer experience from the first to retest and problem of variation in the administration of two form of test to parallel groups is avoided. Most importantly, a pilot study was conducted with 20 participants who were not part of the main study purposively sampled. This helped the researcher to adjust the instrument where necessary.

3.8 Method for data collection through questionnaire

Letter of introduction from the Institute of special Education, Faculty of Education Palacky University Olomouc, CZ was presented to principals/head teachers of the sampled schools ahead of time to enable him/her response by giving approval to conduct research in the schools .The researcher also sought the consent of participants and observed other research ethics. The researcher with the help of assistant researcher administered the instrument to participants in their schools. Participants checked the instrument and return to the researcher within one day to ensure high rate of return. However, email contact of respondents who could not complete theirs within the time was collected and they were reminded to do so either through the email contact of the researcher or inform him went to come and pick it. Also participants were preferred online version of the questionnaire was given the opportunity to participate from the comfort his/her office or home.

3.9 Method of data Analysis

Data from the field for hypotheses one and three were analyzed using two by three contingency table of chi-square test with the help of online chi square calculator. Chi-square test is an inferential and non-parametric statistics that can be used to test no difference hypotheses, it allows the researcher to draw in inferences from the sample about the population and the population has no normal distribution (McMillan, 2000). The choice of this test is based on the fact that the variables concerned are categorical, independent, value are mutually exclusive with fairly large sample. Hypotheses two, four and five were analyzed using t test of Independent samples with the help SPSS software. This test was used because the dependent variables were measured on continuous scale, the independent variables were categorical and there was independence of observations.

CHAPTER FOUR

4 PRESENTATION AND DISCUSSION OF RESULT

This chapter focused on the presentation and discussion of research findings; it was done hypothesis by hypothesis under the sub-headings below.

4.1 Presentation of Result

Hypothesis 1 Teaching experience has influence on teachers' appreciation of the concept of instructional accommodations and its use in education of learners with dysgraphia.

H₀: There is no significant difference between teachers with greater and lesser teaching experience in the appreciation of the concept of instructional accommodations and its application in education of learners with dysgraphia.

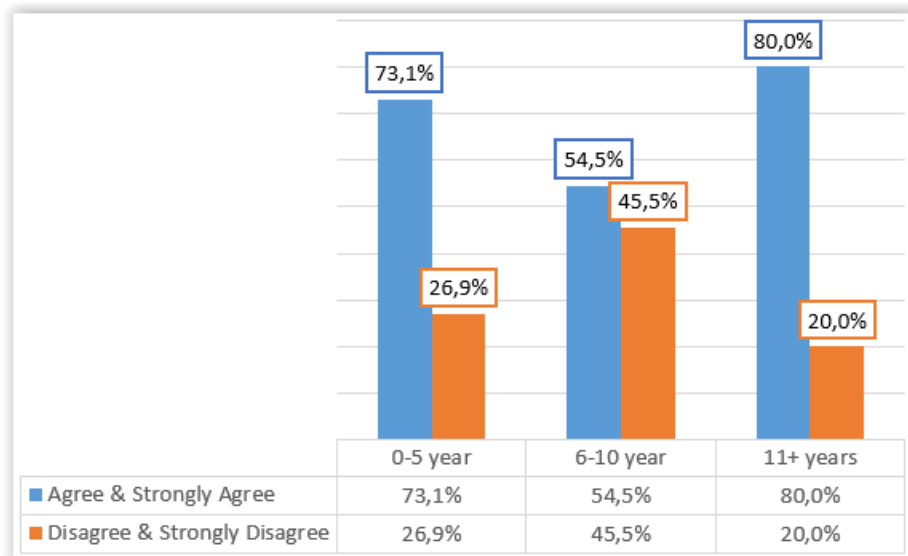
H_A: There is a significant difference between teachers with greater and lesser teaching experience in the appreciation of the concept of instructional accommodations and its application in education of learners with dysgraphia.

Table 3 shows Chi-square analysis for hypothesis of teachers' teaching experience

	observed frequencies					expected frequencies			
	0-5 year	6-10 year	11+ years	Total		0-5 year	6-10 year	11+ years	Total
Agree & Strongly Agree	19	12	32	63	Agree & Strongly Agree	18,61	15,75	28,64	63,00
Disagree & Strongly Disagree	7	10	8	25	Disagree & Strongly Disagree	7,39	6,25	11,36	25,00
Total	26	22	40	88	Total	26,00	22,00	40,00	88,00
Chi-Square Values									
	0-5 year	6-10 year	11+ years	Total	alfa	Chi2	4,562		
Agree & Strongly Agree	0,01	0,89	0,40	1,30	0,05	Chi2-krit	5,991		
Disagree & Strongly Disagree	0,02	2,25	1,00	3,27	0,01	Chi2-krit	3,210		
Total	0,03	3,14	1,39	4,562	0,001	Chi2-krit	13,816		

The result of the analysis in table 3 above shows that the χ^2 statistics is 4.5618 less than critical value of 5.991 at .05 level of significance with 2 degree of freedom. The result is not significant hence the critical value is greater than the calculated value, with this result the null hypothesis which state that there is no significance difference in the appreciation of the concept of instructional accommodations and its application in the education of learners with dysgraphia among teachers with greater and lesser teaching experience is accepted. This implies that teachers' teaching experience does not in any way determine their ability to appreciate the concept of instructional accommodations and its application in education of learners with dysgraphia.

Figure 4 : Bar chart shows teachers' responses to teaching experience



Descriptively, the responses of participants as shown in figure 4 above, 73.1% of teachers with 0-5, 54.5% with 6-10, 80% within 11 and above years teaching experience agreed that teaching experience do not determine the use of instructional accommodations while 26.9% with 0-5, 45.5%, 20% of them disagreed. This is evidence in responses of those who have taught for many

years and those who are fairly and newly employed. This also supports the chi square test analysis as shown earlier.

Hypothesis 2: Teachers’ knowledge on instructional accommodations has influence on utilization of instructional accommodations in teaching children with dysgraphia.

Ha: There is a significant difference between teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations in teaching learners with dysgraphia.

Ho: 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 4 below.

Table 4 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=111)

Variable		N	%	Mean	SD	Sig	df	T	Sig(2-tailed)
Teachers’ knowledge	Teachers with lower knowledge	66	59.46	35.19	5.29	0.61	109	0.63	0.005

Teachers with higher knowledge	45	40.54	24.23	4.26
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P>0.05 df=109; Size effect 0.022

The Table 4 above 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 109 with effect size of 0.022 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.

Hypothesis 3 Teachers' participation in conferences/workshops in specific learning disabilities has influence on utilization of instructional accommodations in teaching learners with dysgraphia.

Ha: There is a significant difference between teachers with higher and lower participation in conferences/workshops in specific learning disabilities in their utilization of instructional accommodations in teaching learners with dysgraphia.

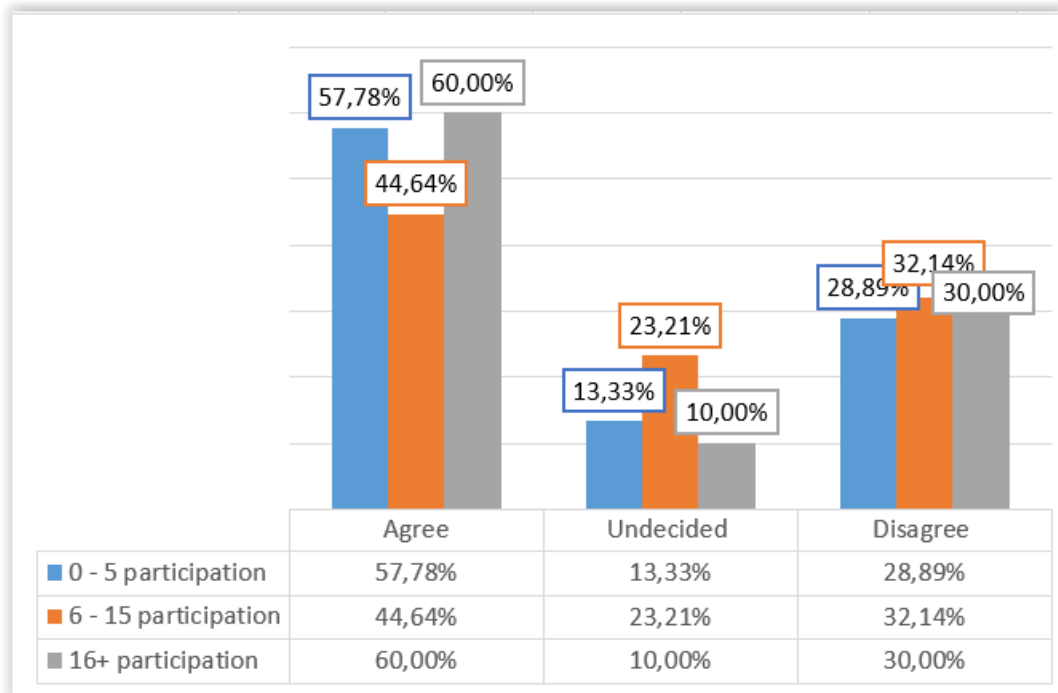
Ho: There is no significant difference between teachers with higher and lower participation in conferences/workshops in special education in the utilization of instructional accommodations in teaching learners with dysgraphia.

Table 5: shows Chi-Square analysis of teachers' participation in conferences/workshop

observed frequencies					expected frequencies				
	Agree & Strongly Agree	undecided	Disagree & Strongly Disagree	Total		Agree & Strongly Agree	undecided	Disagree & Strongly Disagree	Total
0 - 5 participation	26	6	13	45	0 - 5 participation	23,11	8,11	13,78	45,00
6 and more participation	31	14	21	66	6 and more participation	33,89	11,89	20,22	66,00
Total	57	20	34	111	Total	57,00	20,00	34,00	111,00
Chi-Square Values									
	0-5 year	6-10 year	11+ years	Total	alfa	Chi2	1,605		
0 - 5 participation	0,36	0,55	0,04	0,95	0,05	Chi2-krit	5,991		
6 and more participation	0,25	0,37	0,03	0,65	0,01	Chi2-krit	9,210		
Total	0,61	0,92	0,07	1,605	0,001	Chi2-krit	13,816		

In table 5 above, analysis indicates χ^2 value of 1.605 and the critical value of 5.991 at 0.05 level of significance with 2 degree of freedom. The calculated χ^2 is lesser than the critical which implies that there is no significant difference between teachers with higher and lesser number of attendance and participation in conferences/ workshops in special education, the null hypothesis is therefore accepted. This result means that although participation in conferences/ workshops in special education is important however, it does not play any vital role in teachers' ability in using instructional accommodations that are based on needs of learners with dysgraphia in Cross River and Akwa-Ibom state, Nigeria.

Figure 5: Shows teachers responses to participation in conferences/workshops



In 5 figure above, teachers responses are grouped in three categories and number of participation, 0-5(57.78%),6-15 (44.64%),16 and above (60.00%) agreed that participation in conferences/workshops has no vital role in their ability to use of instructional accommodations in education of dysgraphics in schools in the study area, 0-5 (13.33%), 6-15 (23.21%)and 16 and above (10.00%) are undecided while 0-5(28.89%) 6-15 (32.14%) 16 and above (30.00%) disagreed; based on this, the chi-square analysis result shown above is substantiated.

Hypothesis 4: Teachers’ specialized training has influence on utilization of instructional accommodations in teaching learners with dysgraphia.

Ha: There is a difference between teachers with and without specialized training in their utilization of instructional accommodations in teaching learners dysgraphia.

Ho: There is no significant difference between teachers with and without specialized training in their utilization of instructional accommodations in teaching learners with 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 6 below.

Table 6 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=111)

Variable		N	%	Mean	SD	Sig	df	T	Sig(2-tailed)
Specialized training	Teachers with specialized training	17	15.32	9.21	3.03	0.47	109	0.73	0.002
	Teachers without specialized training	94	84.68	41.11	8.55				

P>0.05 df=109; Size effect 0.0501

The Table 6 above 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 109 with effect size of 0.0501 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.

Hypothesis 5 Teachers' attitudes have influence on utilization of instructional accommodations in teaching learners with dysgraphia.

Ha: There is a significant difference between teachers with positive and negative attitudes towards utilization of instructional accommodations in teaching learners with dysgraphia.

H₀ There is no significant difference between teachers' with positive and negative attitudes towards utilization of instructional accommodations in teaching learners with dysgraphia.

The two categories of participants compared were teachers with positive and negative attitudes towards utilization of instructional accommodations in teaching learners with 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 7 below.

Table 7 Independent samples t-test of mean difference in teachers with positive and negative attitudes towards utilization of instructional accommodations in teaching learners with dysgraphia (N=111)

Variable		N	%	Mean	SD	Sig	df	T	Sig(2-tailed)
Teachers' attitudes	Teachers with negative attitudes	68	61.26	27.80	5.04	0.511	109	0.57	0.004
	Teachers with positive attitudes	43	38.74	24.91	3.99				

P>0.05 df=109; Size effect 0.041

The Table 7 above shows that the comparison of teachers with negative attitudes towards the utilization of instructional accommodations in teaching learners dysgraphia has a mean of 27.80 and SD of 5.04 and those with positive attitudes had a mean of 24.91 and SD of 3.99 produced a sig (2-tailed) 0.004 at df of 109 with effect size of 0.041 shows that there was a significant mean difference in teachers with positive and negative attitudes towards utilization of instructional accommodations in teaching learners with dysgraphia observing that the sig (2-tailed) of 0.004 was less than the p-value of 0.05. Therefore, the null hypothesis was rejected. This reveals that attitudes of teachers are important in the utilization of instructional accommodations in teaching learners dysgraphia.

4.1 Discussion of Result

The result of the analysis on the hypothesis on teachers' teaching experience and the appreciation as well as its application in the education of learners with dysgraphia shows that it does not influence. This result is contrary to widely held opinions and other previous studies, particularly Klni and Pdolsky (2016), Ewetan and Ewetan (2015) whose studies explored and valid influence

of teaching experience in the use of instructional accommodations. However, the findings of this present study has been corroborated by Ladd (2008) who opined that seniority of teachers as measured by teaching experience has no instructional value to the teaching-learning process in most educational systems because teachers get bored with the routines in the profession and form business clique which negatively affect their productivity especially if they primary clients are those with special needs that requires patient, commitment and dedication. Also, the finding of this study is affirmed by Wamakote (2010), his study found that teaching experience and application of new pedagogical trends or strategies such as instructional accommodations are not primary correlates. This is particularly true about the use instructional accommodations as most of them in the 21st century are technology driven teachers with higher teaching experience are not posit to using technology in the classroom like the younger teachers who find technology based accommodations best tools to facilitate teaching-learning process for learners with special needs including those with dysgraphia in the school system.

The result from the qualitative interview with principals and head teachers on this subject matter is in line with the finding of this study as most of them confirmed that Nigeria education and economic system do not provide for their adequate needs, the older you are in the profession the less productive you become because you will be pre occupied with the life after retirement with less attention to professional responsibilities. *'Well, let me confidently tell you that I am now concern about my post service life because government does not promptly pay teachers entitlement so instead of focusing and bring my experience to bear in new instructional trend or practice like accommodations for these learners I assigned them the younger teachers''*. The opinions of most interviewees particularly principals across the schools reflect the above italicized statement. However, principals and head teachers in Faith-based schools seem to differ marginally in their

opinions. The marginal differences in the opinions of principals and head teachers of Faith-Based schools is implicitly expression of their religious perspective to the provision of services to learners with special needs (dysgraphia) and the school not to government. On what is the common practice in the school, principals views are that they support the policy as stated by government with consent of the parents and the before any accommodation is introduced to child. Two head teachers interviewed said they assigned experienced teacher to work with any learner who is qualified for accommodation especially newly employed teachers. Respondents' views and opinion on teachers' knowledge, competence on instructional accommodations was a mixed one few as they have understanding of some aspects like the categories but do not know how to involve students in the selection. This was common view among head teachers. Based on the result from quantitative analysis of hypothesis one and opinions of principals and head teachers in the samples schools, it obvious that the widely held position that experience is the best teacher does not apply to teachers' appreciation of instructional accommodations and its application in education of learners with dysgraphia in Cross River and Akwa-Ibom state, Nigeria.

Result of analysis on hypothesis two which focus on a no difference between teachers with higher and lower knowledge of instructional accommodations on utilization of instructional accommodations 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 Ajuwan (2012) who correlation research into teachers' knowledge and use of instructional accommodations had shown that there is link between these variables. Most importantly, finding of this present student is supported by Elliott and Thurlow (2000) and Boswser, Korsten and Zaball (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) study 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.

Result of the interview 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. *“The policy is good for the children with disability because it will help them overcome some challenges but government has not fully provided training that is needed so in terms of procedures few are getting it right....”* Among head teachers, one of them noted that *“we have written a memo from our conference to ministry of Education to train head of schools on how to handle accommodation policy because teachers come to us regularly with some questions on some aspect they don't understand”*. An insight into the responses of interviewees there seems to be 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 third hypothesis focuses on the influence of teachers' participation in conferences/workshops in relation to their ability to use instructional accommodations that are based on needs of learners with dysgraphia. Ideally, workshops are potent tools for training and building of human capacity to improve skills for efficiency in service delivery and conferences offer opportunity to share research finding on current pedagogical issues in special needs education primarily improve professional practices and provide solutions to problems in teaching-learning process. However, from this study findings indicate that despite the above participation in conferences/ workshops have no significant role to play in teachers' ability to use instructional accommodations in education of dysgraphics in the study area. The findings are not in agreement with most of the empirical researches reviewed particularly, it is not supported by Hill (2012) and NAEC (2015). Hill's study concluded that participation in conferences/ workshops helps teachers to maximize their knowledge beyond the scope of textbooks in content areas which may have become outdated in view of dynamism that characterized special needs education practice. This further implies that it does but not in the area of using of instructional accommodation with dysgraphics. In the same way NAEC, Nigeria based professional association evaluates her activities in conferences/workshops for the past 25 years found that it correlates the use instructional practices like accommodations. Also, Cross River state Ministry of Education (2012), Robinson (2013) and Fareo (2013) in different research on the subject matters found that teachers' use of reasonable accommodations to some extent is linked to their participation in conferences/ workshops. Unlike the above, findings of the present study is affirmed by Ihenach (2006) who's study found that participation in conferences/workshops in special education in Nigeria has no much value for teachers in primary and secondary schools, even when national workshops are organize most of them are uninterested. Thus, there is no direct correlation between conference/ workshop

participation and ability to use instructional strategy like accommodations. He however opined that themes on administration instructional accommodations are common sub-themes in conferences and focus of workshops organized by professional associations. Also, Orim (2015) found that although research findings presented in conferences can form topics for workshops training for teachers it is not likely that those without previous apply accommodations strategies for all special needs persons as each has unique needs that requires particular expertise. The author concludes educational policies like SGDs and inclusion should explore opportunities beyond conferences /workshops to build capacity of teachers for successful implementation for learners with handwriting disability in schools in Nigeria.

Responses from head teachers and principals indicate that schools that they have any specific policy on participation in conference/ workshop but when they are invited they get approval form from supervisory ministry or agency to attend and that depends on the cost implication. On number of conferences/workshops principals attends more that the head teachers more so, it depend on the personal engagements and the time of the event. They said that benefits from a conferences or workshops depend on the interest and level of participation, active and passive participants have different take home. However, head teachers of Faith-Based schools report more participation than those in Government schools. Both principals and head teachers said they allow staff to attend conferences/ workshops in special education provided it has no cost on the school. One of the head teachers said, *“any member of staff who indicate interest in conference/workshop is permitted but apply for permission attaching evidence of invitation which will be forwarded to ministry for written approval however, any one organized during holidays does not require official permission.”* Base on the above, it is implicitly obvious that that school does not bear financial

implications of staff participation in conferences/ workshops however, there is interest in participation in such activities.

Result from the analysis and testing of hypothesis four which states that there is no significant difference between teachers with and without specialized training in their utilization of instructional accommodations in teaching learners with dysgraphia revealed that specialized training in relevant areas for teachers is necessary as it effectively enhances their ability to use instructional accommodations. This finding is in line with Gray (2017), Ruzena (2005) 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 handwriting disability is core to understanding the disability, dynamics and mechanism of the process and the science of handwriting. This training is critical and necessary as the 3ps in handwriting, 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 areas like assistive technology based instructional accommodations has become not just a requirement for graduation but a condition for practical competence in the use of accommodations by teachers. This is because of the complexity of technology based accommodations.

The responses of principals and head teachers to specialized training were an expression of a determination to provide good leadership and implement the policy of instructional accommodations in the best interest of the learners and the school. They affirmed that training is very important, one of the head teachers said she supports the policy and encourages her teachers to enroll for part-time studies to update their knowledge because accommodation strategy is good for the children with handwriting disability. Specifically, on how the school supports specialized

training for teachers, *I cannot do more the power of the office I hold however, “I press on the State Universal Education Board to approve further studies for teachers particularly in special education with full salary and allowances which other general teachers do not receive and for the past few years some have benefited”.*

The last hypothesis deals with no significant difference between teachers with positive and negative attitudes towards the use of instructional accommodations in teaching learners with dysgraphia. The finding from its testing indicates that attitudes of teachers affect utilization of accommodations in education of learners with this disability. The result is validated by previous studies like Adebayo (2015) who in a survey research of teachers' attitudes towards instructional accommodations revealed that 64% of them support the proposition of attitudes as determinant of services to learners with special needs conditions as against 36% that opposes it. In related studies, Ozoji (2005), Brayang, Melody, Lysandra and Timothy (2000) opined that scientific, attachment and concern attitudes of teachers predisposed to be empathetic and provide necessary professional and non-professional services or assistance to learners with disabilities and on the other hand traditional, indifference and rejection attitudes sees provision of services including quality education for learners with this disability as not worthwhile. Also, Yusuf and Balogun (2011), Avramidis (2010) research support finding of this present study when they posited that it is positive attitudes to ICT influences the integration technology in classroom as inclusionary practice and implementation of instructional accommodations policy for these learners to reduce the level of their frustration to learn and express the degree they have mastered instructional content in a particular subject area. However, the concern raised is access to quality technology based accommodations, their cost and how to maintain some the devices in Nigeria. In Cassidy (2011), the finding also affirmed the present one as it revealed that teachers with concern, warm and

welcoming dispositions or attitudes are posit to unlock the curriculum for learners with special needs in and instructional setting through accommodations or modifications. These professional attitudes enhance implementation of accommodations in the classroom and increased receptivity of all learners. On the contrary, Campell (2016) found that teachers' attitude is relative, dynamic and depend on many other factors such as degree of the disability so it cannot be counted majorly as determinant of provision of services education and assistive technology for learners with this disability.

Responses from interviewees on their attitudes it reflect the general trend in attitudinal studies in special needs education in Nigeria. Particularly towards instructional accommodations for dysgraphics in schools, few of them sounds indifferent and negative but most have scientific, concern, empathic attitudes towards learners with the disability as they noted that the child with the disability would been their own biological child, as parent and head of school I have to help them to learn because it is frustrating for the child who has illegible hand writing and the teacher when assessing their written assignments, the child may be mark done wrongly because the sample could not be understood by the teacher. *“Accommodations is for the interest of all however, as a an individual and head teachers I partner with Parents Teachers Association (PTA) and other organizations like NGOs to provide some computers for the purpose of helping learners”*. Principals confirmed that it is a policy of government so teachers have to comply with more so, accommodations make teaching-learning process interesting for both student and teachers. Some said using instructional accommodations in their school put them ahead of others in inclusionary practices.

CHAPTER FIVE

5 SUMMARY, CONCLUSION AND RECOMMENDATIONS

Chapter five deals with the summary of the whole research highlighting salient points in each chapter, draws conclusion and make recommendations based on key findings as well as suggest areas for further studies. For orderly presentation it is organized in the following headings:

5.1 Summary of the study

This study titled “Teachers utilization of instructional accommodations in teaching learners with dygraphia in Cross River and Akwa-Ibom state, Nigeria”, Primarily investigated variables such as teachers teaching experience, knowledge of the concept of instructional accommodations, teachers’ participation in conferences/workshops in special education, teachers specialized training and attitudes of teachers towards instructional accommodations that influenced the use of instructional accommodations. Structurally, it is made up of five chapters, the first one is the introduction with focus on the background, purposes, five hypotheses the guided the study and they are:

- H1: Teaching experience has influence on teachers’ appreciation of the concept of instructional accommodations and its use in education of learners with dysgraphia.
- H2: Teachers’ knowledge on instructional accommodations has influence on utilization of instructional accommodations in teaching children with dysgraphia.
- H3: Teachers’ participation in conferences/workshops in specific learning disabilities has influence on utilization of instructional accommodations in teaching learners with dysgraphia.

- H4 Teachers' specialized training has influence on utilization of instructional accommodations in teaching learners with dysgraphia.
- H5: Teachers' attitudes have influence on utilization of instructional accommodations in teaching learners with dysgraphia.

The chapter also articulate the statement of problem, significant of the study to key stakeholders in education of learners with dysgraphia, theoretical frame work, limitations, and delimitations of the study as well as operational definition of key terms that will enhance the understanding of the study by all readers irrespective of their background.

Chapter two deals with review of empirical literature that are relevant to the study such as teachers teaching experience, knowledge of instructional accommodations, teachers' participation on conferences/workshops, specialized training, teachers' attitudes, and dysgraphia as a special needs conditions with its related sub-themes like prevalence among others. This section gives the researcher opportunity to explore previous researches with the view of using them to support and substantiate the discussion of findings of the present study.

The third chapter is concern with the methodology and it specifically, described the research design, study area, population of the study, the sample and sampling technique, instrument for the collection of data, it validation and reliability, method of procedure for data collection and analysis.

5.2 Conclusion

Base on global policy, legislations as well empirical indicators in most countries like Nigeria, education has remain and is been adopted as tool for personal and national development for all including learners with dysgraphia. Although this disability and those living with it has been neglected in pedagogical practice, research, intervention efforts have recently been put in place in Nigeria through New National policy on education to integrate instructional accommodations in

education of learners with special needs those with hand writing disability inclusive. This recognizes the role of teachers in the success of using accommodations to improve learning outcome and gain mastery in different subject area. This research considers many variables such teaching experience, knowledge, attitudes among others as they relate to teachers ability in using instructional accommodations. Based on the findings the following conclusions were drawn:

1. Teachers' teaching experience is important in teaching-learning process but it does not influence or enhance their ability to appreciate the concept and use of instructional accommodations in education of learners with dysgraphia in Cross River and Akwa-Ibom state, Nigeria.

2. Teachers' conceptual and professional knowledge or competence is vital and cardinal in the successful utilization of instructional accommodations in educating learners with the disability especially technology based accommodations that have become an integral part of modern classroom and educational practice in the country.

3. Teachers' participation in conferences/workshops in special education is important but has no specific and prominent influence on their ability to use instructional accommodations that meet the instructional needs of learners with dysgraphia in Cross River and Akwa-Ibom state, Nigeria.

4. Specialized training in fundamental area such specific learning disabilities with focus on dysgraphia as special need condition, its manifestations, assessment, intervention, application of reasonable instructional accommodations with emphasis on technology based one among other components is most important as it matches learners' needs with teachers' competence in teaching-learning process where every child's right to equal participation in all learning activities counts.

5. Teachers' attitudes are critical determinant of the provision of educational services to learners with this disability especially as it relates with use of instructional accommodations in the study

area. Positive personal and professional attitudes facilitate and increase the success of implementing instructional accommodations in the interest of the learners with dysgraphia.

5.3 Recommendations

To ensure that stakeholders in education of these learners benefit from this study, key recommendations informed by the result are made and they include among others the under mention:

- The management of schools should place emphasis on teachers' competence in using instructional accommodation to meet the needs learners rather than using seniority criteria in allocation of teaching responsibilities to teachers particularly those with dysgraphia.
- Teachers' capacity on the implementation of instructional accommodations should be accorded greater priority in teachers training programme in the country to enhance their ability to use all categories of accommodations that will meet learners' needs and equalize opportunities in participating in all learning activities.
- Instructional accommodations should be included in basic special education course (Introduction to special education) meant for all teachers in training in Nigeria. This has become imperative as the prevalence of the disability is increasing due lack of effective intervention and inclusive educational practice in Nigeria.
- Nigerian universities and other higher institutions with special education programmes in specific learning disabilities should review and integrate academic accommodations into their categorical /non categorical approach as full and mandatory course to train students

on global best practices on instructional accommodations with due regards to national peculiarity.

- Increased advocacy and public awareness on the use of Instructional accommodations and attitudinal re-orientation to educate parents and general education teachers on relevance of the practice should be designed and implemented.
- Quality assurance and regulatory bodies like Local Education Authority, State Universal Education Board, and Nigerian Universities Commission among others should improve the capacity of their staff on monitoring and evaluation and other regulations guiding the proper use of accommodations.
- Stakeholders should still organize conferences/workshops on current issues and themes in special education on current for teachers so as to build their capacity in other areas of provision of services for these learners besides instructional accommodations.

5.4 Suggestions for further studies

The broadness of the subject matter of this study could have been adequately covered in a single research therefore, to expand the scope of the research; further studies should be conducted in the following areas with different methodology, research design, study area, population and procedure for data analysis:

- ✓ Parents' perception of instructional accommodations in inclusive education.
- ✓ Attainment of sustainable development goals in education (SDGs) through implementation of instructional accommodations.
- ✓ The role of government in the implementation of instructional accommodations for students with specific learning disabilities.

- ✓ Challenges and prospect of utilization of instructional accommodations for students with dysgraphia.
- ✓ The absence of national legislative frame work on instructional accommodations and access to quality education among dysgraphics in schools.

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APPENDIX A

Institute of Special Education
Faculty of Education
Palacky University Olomouc
Czech Republic.
November, 2017.

The Principal/head teacher

.....
.....

Sir/Madam,

Permission to conduct Research in your school

I am a doctoral student in the above mentioned school, I write to seek for your kind approval to conduct a research in your school. The topic of the dissertation is, **Teachers' utilization of instructional accommodations in teaching learners with dysgraphia in Cross River –Akwa Ibom state ,Nigeria.**

The views of teachers who will be the participants will be treated confidentially and use specifically for research purpose, It is my hope that when this research is completed it will be beneficial to all stake holders in special education and improve its professional practice in Nigeria.

Yours faithfully
Orim Samuel orim
Samuelorim1@gmail.com
Samuel.orim@upol.cz
+2348055678108,+420794026439

APPENDIX B

QUESTIONNAIRE ON TEACHERS UTILIZATION OF INSTRUCTIONAL ACCOMMODATIONS IN TEACHING LEARNERS WITH DYSGRAPHIA (QTUIA)

Dear Participant,

This questionnaire will illicit response on teachers' utilization of instructional accommodations in teaching students with dysgrphia in Nigeria. You are kindly requested to freely express your opinion, it will be treated confidentially. The questionnaire is divided into two parts.

Part A: Personal data

Instruction: Please check { } as applicable to you.

Gender: { } male { } female { }

Educational qualification: NCE { } B.Ed { } M.Ed { } MA { } PhD { }

Area of specialized training: Specific Learning disabilities { } Math learning disability { }

Reading disabilities { } Handwriting disabilities { } others { }

Teaching experience: 0-5 { } 6-10 { } 11 and above { }

Number of conferences/workshops in special education attended in the last ten years 0-5 { } 6-15 { } 16 and above { }

Membership of professional Associations: NAEC { } NASET { } others { }

Section B Part I Instruction: You are humbly requested to check { } these statements as the best apply to you using strongly Agreed (SA), Agreed (A), Undecided(UD) Disagreed (D)strongly Disagreed (SD)

SN	Statements	SA	A	UD	D	SD
	Teachers' teaching experience					
1	Actual classroom experience with learners with dysgraphia is necessary for proper use of instructional accommodation in teaching					
2	Teachers who have taught for more than five years use instructional accommodations to teach learners with dysgraphia effectively.					
3	I fall back to what I did in the past when I am have issues using instructional accommodations in teaching learners with dysgraphia					
4	I always asked my senior colleagues for clarification about any problem on the use of instructional accommodations when teaching learners with writing disability.					
5	The most senior teachers do not always have challenges in using instructional					

	accommodations in teaching learners with this hand writing disability.					
6	I handle problems related the use of instructional accommodations not because I have taught for a Long time.					
7	Newly employed teachers are not allowed to use instructional accommodations in teaching learners with this disability.					
8	The first time I tried to use Instructional accommodations in teaching I had problem of selecting appropriate one.					
9	You do not need experience to use time schedule accommodations in teaching learners with handwriting disability.					
10	Mode of response in instructional accommodations does not need experience.					
	Teachers' knowledge on instructional accommodations					
11	Knowledge about the concept of instructional accommodations influences its utilization in teaching learners with this disability.					
12	When you know the different types of accommodations and how to document them it					

	helps you to properly use them in teaching learners with dysgraphia.					
13	Selection and appropriate use of instructional accommodations in teaching these learners depends on your knowledge					
14	Knowing how to evaluate Instructional accommodations contribute to its appropriate usage in teaching.					
15	Being aware of reasons/importance of instructional accommodations is necessary for effective utilization					
16	I can correctly use instructional accommodations.					
17	Knowledge of policy/rules on Instructional accommodations is not important in teaching learners with dysgraphia.					
18	Knowing how to allow frequent breaks during instruction, test, and examination is not necessary in Instructional accommodations.					
19	The knowledge of choice of setting does not influence the use of instructional accommodations.					

20	Knowledge of time schedule does not enhance the use of Instructional accommodations in teaching learners with the disability.					
	Teachers' participation in conferences/workshops					
21	Participation in conferences/workshops enhances utilization of Instructional accommodations in teaching learners with writing disability.					
22	All forms of participation improves teachers' ability in using Instructional accommodations					
23	Chairing a panel or roundtable sessions improves one's ability to use Instructional accommodations in teaching.					
24	Being a repertoire in a panel build teachers' ability to use instructional accommodations					
25	Presenting papers in conferences improves my efficiency teaching and using instructional accommodations with learners with writing disability.					
26	Attending conferences with or without presenting papers is not important to me.					

27	Participating in writing a communiqué after the conference does not improve ability to use instructional accommodations.					
28	I do not attend workshops because they are meaningless to me.					
29	Being member of conference/workshop planning committee does not influence my ability to use instructional accommodations.					
30	Being member of conference/workshop planning committee does not influence my ability to use instructional accommodations.					
31	Attending plenary session of conferences is a waste of time to me.					
	Teachers' specialized training					
32	Training on professional use of Instructional accommodations is every necessary for it proper use in teaching learners with disability.					
33	Training on technology based instructional accommodations improves their utilization by teachers in teaching learners with writing disability.					

34	Training on development of instructional accommodations for learners with dysgraphia also helps in their utilization in teaching.					
35	Training in the nature, type, characteristics and manifestation of dysgraphia is important in the choice of instructional accommodation.					
36	Majoring on specific learning disorders as field of study is the basis for being able to use instructional accommodations in teaching learners with the disability.					
37	Training on the use of scribe/peer writer helps me to ensure that professional practice and standards are maintained.					
38	Every teacher can correctly use instructional accommodations for learners with dysgraphia.					
39	You do not need any special training to be able evaluate the effectiveness of instructional accommodations as basis for review.					
40	Training on policy, rules and professional ethics on the use of instructional accommodations is waste of resources.					

41	Training on how to involve parents in instructional accommodations process is not necessary because they are not teachers.					
	Teachers' attitudes towards instructional accommodations					
42	I appreciate the concept of instructional accommodations and it use in education of learners with dysgraphia.					
43	I feel bad when see learners with handwriting disability struggling to express themselves in written expression when they can use computers with approved software for dygraphia.					
44	When learners with dysgraphia use technology like computer to reduce the effect on disability on their writing task I feel happy.					
45	I can spend my time or money to support the use of instructional accommodations in educating learners with this disability.					
46	I do not look done on learners who use instructional accommodations to learn.					
47	Every learner has his/her own challenge so there is nothing important about instructional accommodations for those with dysgraphia.					

48	Frequent breaks during instruction/evaluation are abuse of teaching – learning process.					
49	Allowing learners with handwriting disability to make a choice of setting for instruction/evaluation is a malpractice in the school system.					
50	I am angry when learners with this disability are allowed to provide orally answers to the same questions in evaluation activities like tests, class work and examinations.					
51	Allowing these learners to choose either to take exams, test and instructions in a private room or small group is mark of encouraging laziness and reduce the standard and value.					
	Utilization of instructional accommodations					
52	Summary note of my lessons are given to learners with dysgraphia in audio /recording format.					
53	Salient points of all instructional activities are sent to those with handwriting disability electronically through their emails.					

54	Learners with this disability are permitted to record their responses in class activities, other evaluation exercises in digital file format and I grade them objectively.					
55	I allow learners with dysgraphia to complete their instructional activities/evaluations in multiple days.					
56	I frequently extend time for learning activities and evaluations for learners with writing disability					
57	Conventional instructional or evaluations procedures are modify for those with disability without reducing the standard, content and value of the task.					
58	Learners with personal computers with/without speech to text software are allowed to use them in all learning activities.					
59	I use instructional accommodations that are based on learner's needs and task to be performed.					
60	Any accommodation I use reduces effect of dysgraphia on the learners and increase access to instruction and demonstration of learning.					

APPENDIX C

QUESTIONS FOR EVALUATION OF TEACHERS' COMPETENCE IN INSTRUCTIONAL ACCOMMODATIONS FOR CHILDREN WITH DYSGRAPHIA (QETKIALD)

Dear participants,

You are kindly requested to provide answers to the following questions as they express the extent of your knowledge on the concept of instructional accommodations in teaching learners with dysgraphia.

You are to check in the space provided () the option that best described your competence in instructional accommodations for children with dysgraphia. Strongly Agree () Agree () Disagree () and strongly Disagree ().

S/No	Items	SA	A	D	SD
1	Accommodating learners with dysgraphia is not by adjusting instructional practices to improve access to learning materials without reducing the standard				
2	I know that using audio and electronic format to present learning activities/ materials is part of accommodations for dygraphics				

3	Oral answers are not part of instructional accommodations for learners with dysgraphia				
4	I can make reasonable choice accommodations for learners with dysgraphia				
5	I know that instructional accommodations and modifications mean different things				
6	The practice of accommodation does not permit learners to always change or stop using accommodations base on evaluation report				
7	Regular evaluation and monitoring of instructional accommodations is not necessary				
8	Instructional accommodations should not be based on policy and legal frame work of the country				
9	I know that instructional accommodations is not about providing equal opportunities to all learners to participate in every learning activities				
10	In the practice of instructional accommodation, allowing extra and double time for learners with dysgraphia compromises the standard				

APPENDIX D

QUESTIONS FOR INTERVIEW SESSION WITH PRINCIPALS AND HEAD TEACHERS

Instruction: You are kindly requested to respond to these questions freely based on your knowledge, opinion and experience. Confidentiality of your response is assured as the will be used only for the purpose of research. Your response will be recorded and later play so that you can listen and make clarifications where it is necessary.

Teachers' teaching experience on the use of instructional accommodations

1. What is your thought about the influence of teaching experience on the use of instructional accommodations for learners with dysgraphia?
2. What is the practice in your school?

Teachers' knowledge on instructional accommodations

3. What is your understanding about the concept of instructional accommodations for learners with dysgraphia?
4. What are they common ones use in your school with these learners?
5. What is the procedure for learners with this disability to use instructional accommodations?
6. How do you support teachers to use instructional accommodations for learners with dysgraphia?

Teachers' participation in conferences/ workshops in relevant areas and themes

7. What is your policy on teachers' participation in conferences/ workshops in relevant areas and themes?
8. Do you think teachers' participation in conferences/workshops influence their use of instructional accommodations in teaching learners with dysgraphia?
9. Do you support to attend?
10. How many conferences/workshops on dysgraphia and related areas have you attended since you became a principal or Head teacher?
11. Did you benefit from them?,

Teachers' specialized training on relevant areas

12. What is policy of your school on teachers' training on dysgraphia and related areas through in-service or part time studies?
13. What is your opinion about influence of training in specific and relevant areas on teacher's use of instructional accommodations?
14. How do you support teachers' training in this area?

Teachers' attitudes toward instructional accommodations for learners with dysgraphia

15. What do you think about instructional accommodations for learners with dysgraphia?

16. How do you feel when you a teacher refuse or use to use instructional accommodations to teach learners with dysgraphia?

17. What are teachers' general attitudes about accommodations for learners with the disability?

18. How do you encourage teachers to use instructional accommodations with these learners?

19. How do you make sacrifice for the provision of instructional accommodations for learners with this disability?

20. How does the school officially acquire these accommodations for the learners?