

**ART THERAPY IN SPECIAL NEEDS EDUCATION: A CASE
OF AUTISM IN NEW HORIZON SPECIAL SCHOOL IN
ACCRA**

By
Gracevictoria Esi Saah
(BSc. Architecture)

A thesis submitted to the School of Graduate Studies, Kwame
Nkrumah University of Science and Technology in partial fulfillment
of the requirements
for the degree of

MASTER OF PHILOSOPHY IN ART EDUCATION

Faculty of Art

College of Art and Built Environment

July, 2017

© 2017, Department of General Art Studies

DECLARATION

I hereby declare that this submission is my own work towards the Master of Philosophy in Art Education degree, and that to the best of my knowledge it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the university, except where due acknowledgement has been made in the text.

KNUST

Gracevictoria Esi Saah (PG3639815)

(Student's Name and ID)

Signature

Date

Certified by:

Dr. (Mrs). Mavis Osei

(Supervisor's Name)

Signature

Date

Certified by:

Dr. Patrick Osei-Poku

(Head of Department's Name)

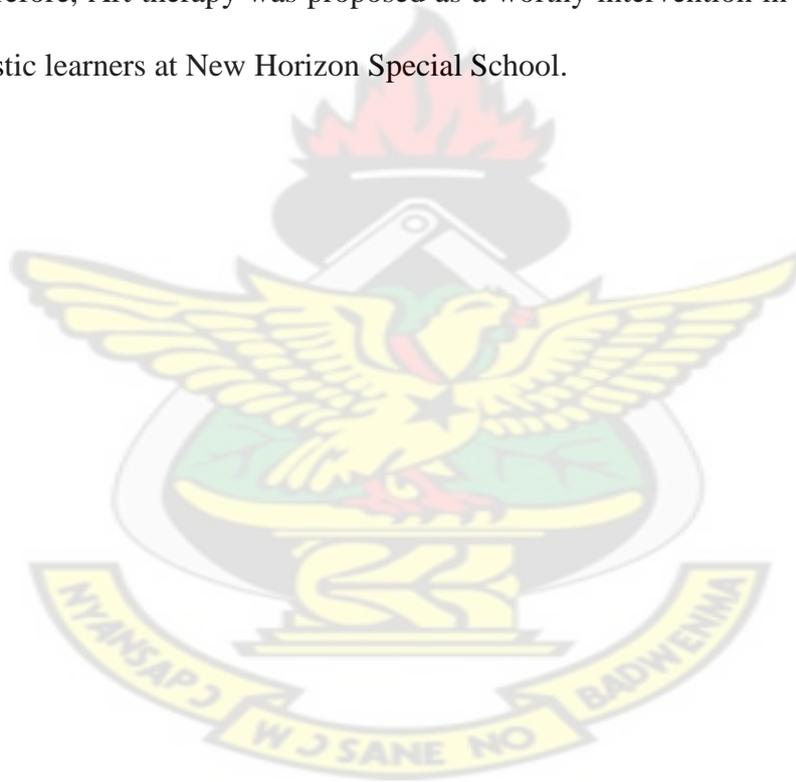
Signature

Date

ABSTRACT

Inclusive Education (IE) has become very necessary in education today, and the increasing prevalence of cases such as autism and the fear of autistic individuals missing out on quality education to assist them attain their full potential as they get integrated into society cannot be denied. Unfortunately, the Special Educational Needs Policy of Ghana does not include a curriculum for teaching autistic children. Autism schools and teachers in Ghana are compelled to use curriculums that may not suit the needs and learning styles of autistic learners or adopt curriculums of other jurisdictions. This study investigated how autism teachers teach and autistic learners imbibe instructions, and the therapies used at the New Horizon Special School at Cantonments in Accra, Ghana. The study also explored the world and characteristics of autistic learners and how they function, and how the inclusion of Art Therapy as an intervention may be helpful in teaching autistic learners at the New Horizon Special School, as studies have proved its efficacy in this regard. The research being qualitative was quasi-experimental and descriptive in nature, and adopted observation and interview as data collection instruments. These helped to identify and describe the characteristics of autistic learners at the school, the instructional strategies and existing therapies employed in the school, and their influences or impact on the education of Numeracy and Literacy. It also facilitated the description of Art therapy sessions, processes and outcomes on the behaviour and coping skills of autistic pupils were also described. Purposive, cluster and simple random sampling techniques were adopted for the study; sampling 21 participants comprising 9 autistic pupils each in the senior and junior autism classes, 2 autism teachers and 1 sensory coach. The study identified art therapy as a worthy

inclusion in the education of autistic individuals. Therefore, a series of art therapy sessions were conducted for autistic learners in groups and individually during which their behavioural differences were observed. The art of the autistic learners was interpreted for the development of an art therapy inclusive teaching model for autistic individuals. The model was pre-tested and was found to enhance the communication and personality of the autistic learners while improving classroom management. Typically, aggressive and hyperactive pupils had better control of their emotions through art therapy in Numeracy and Literacy education. Therefore, Art therapy was proposed as a worthy intervention in the education of autistic learners at New Horizon Special School.



DEDICATION

I dedicate this thesis first to the Almighty God for making it possible for me to complete it successfully. He has indeed been faithful to me.

To my parents, Dr. Albert Amoah Saah and Mrs. Margaret Saah

To my younger sister, Gloria Ewura Ama Saah

To my best friend, Maxwell Affram



ACKNOWLEDGEMENTS

All praise and thanks be to the Almighty God for His kindness towards me as I worked through this project.

My sincere gratitude goes to my supervisor Dr. (Mrs.) Mavis Osei, for supervising the entire project and for being a pillar for me.

My heartfelt gratitude goes to the Principal, Education Coordinator and Autism teachers of the New Horizon Special School for their acceptance and support without which the project would not have been possible.

My earnest acknowledgement also goes to Dr. (Mrs.) Akosua Tachie-Menson of the Department of General Art Studies for being an inspiration to me and willingly sharing knowledge and urging me on.

I say a big thank you to Dr. Joe Adu-Agyem of the Department of General Art Studies for being a source of encouragement throughout this project.

Finally, I am thankful to all the lecturers and other staff members of the Department of General Art Studies for their encouragement and for keeping me going.

TABLE OF CONTENTS

	PAGE
DECLARATION.....	i
ABSTRACT.....	iii
DEDICATION.....	v
ACKNOWLEDGEMENTS	vi
TABLE OF CONTENTS	vii
LIST OF PLATES	x
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background to the Study	1
1.2 Statement of the Problem	5
1.3 Objectives of the Study.....	7
1.4 Research Questions.....	7
1.5 Delimitation	7
1.6 Limitations.....	8
1.7 Definition of Terms	8
1.8 Acronyms/Abbreviations.....	10
1.9 Importance of the Study	11

1.10 Arrangement of the rest of Text	11
CHAPTER TWO	12
REVIEW OF RELATED LITERATURE.....	12
2.1 Autism	12
2.2 Art Therapy.....	18
2.3 Autism and Art Therapy	20
2.4 Autism and Education	22
2.5 Child Art and Development.....	23
2.6 Theories and Models	33
2.7 Conceptual Framework.....	34
CHAPTER THREE	36
METHODOLOGY	36
3.1 Research Design	36
3.2 Population.....	41
3.3 Data Collection Instruments	45
3.4 Types of Data.....	51
3.5 Data Collection Process.....	52
3.6 Activities Undertaken for Research Objective One	53
3.7 Activities Undertaken for Research Objective Two.....	60
3.8 Activities Undertaken for Research Objective Three.....	61
CHAPTER FOUR.....	64

PRESENTATION AND DISCUSSION OF FINDINGS	64
4.1 Presentation and discussion of findings for research objective one	64
4.3 Presentation and discussion of findings for research objective two	96
4.4 Presentation and discussion of findings for research objective three	149
4.5 Challenges encountered during testing of developed art therapy intervention	160
CHAPTER FIVE	161
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	161
5.1 Summary of the study	161
5.2 Conclusions	163
5.3 Recommendations	164
REFERENCES.....	166
APPENDICES.....	177
APPENDIX A	177
APPENDIX B.....	180
APPENDIX C	183
APPENDIX D	191
APPENDIX E.....	194

LIST OF PLATES

PLATE	PAGE
Plate 3.1: Conceptual Framework.....	35
Plate 3.2: Sampling Design.....	45
Plate 4.1: Sherry “Foam painting”	99
Plate 4.2: Jeromy “Foam painting”	100
Plate 4.3: Leo “Foam painting”	100
Plate 4.4: Griffy “Foam painting”	101
Plate 4.5: Aidy “Face mask”	103
Plate 4.6: KayCee “Face mask”	103
Plate 4.7: Group butterfly	103
Plate 4.8: Aidy “Self-image”	105
Plate 4.9: Aidy “Colour yourself”	106
Plate 4.10: Aidy “Free expression”	108
Plate 4.11: Aidy “Draw your family”	109
Plate 4.12: Aidy “How do you feel?”	110
Plate 4.13: Jack “Self-image”	111
Plate 4.14: Jack “Put it all here”	111
Plate 4.15: Jack “Free expression”	113
Plate 4.16: D-D “Hand prints”	115
Plate 4.17: D-D “Paint your body”	116
Plate 4.18: D-D “Free expression 1”	117
Plate 4.19: D-D “Free expression 2”	118
Plate 4.20: D-D “Free expression 3”	120

Plate 4.21: D-D “Draw your family”	121
Plate 4.22: KayCee “Self-image”	122
Plate 4.23: KayCee “Draw yourself”	123
Plate 4.24: KayCee “How do you feel?”	124
Plate 4.25: KayCee “Colour yourself”	126
Plate 4.26: KayCee “Draw your family”	126
Plate 4.27: Leo “Self-image”	127
Plate 4.28: Leo “How do you feel?”	128
Plate 4.29: Leo “Free expression”	129
Plate 4.30: Leo “Draw your family”	130
Plate 4.31: My Friend “Free expression”	132
Plate 4.32: My Friend “Colour yourself”	134
Plate 4.33: My Friend “Draw your family”	135
Plate 4.34: Sherry “Self-image”	137
Plate 4.35: Sherry “Free expression”	138
Plate 4.36: Sherry “How do you feel?”	139
Plate 4.37: Sherry “Draw your family”	139
Plate 4.38: Jeromy “Self-image 1”	141
Plate 4.39: Jeromy “Self-image 2”	143
Plate 4.40: Jeromy “Colour yourself”	144
Plate 4.41: Griffy “Free expression 1”	145
Plate 4.42: Griffy “Free expression 2”	146
Plate 4.43: Gracevictoria’s Art Therapy Model for Autism Education.	148
Plate 4.44: Aidy “Art therapy in Numeracy lesson”	152
Plate 4.45: D-D “Art therapy in Literacy lesson 1”	154

Plate 4.46: D-D “Art therapy in Literacy lesson 2” 155

Plate 4.47: Leo “Art therapy in Numeracy lesson” 157

Plate 4.48: Griffy “Art therapy in literacy lesson” 159

KNUST



CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Autism Spectrum Disorder (ASD) is a developmental disability that can cause significant social, communication and behavioural challenges. According to O'Callaghan (2002) autism is not a single disease but a name given to a set of observable behavioural characteristics of an individual resulting from interactions with the environment that may have many causes. Autism is a subtype disorder of the ASD in which children suffer from intellectual disabilities and may be nonverbal adversely affecting a child's communication, socialisation and interests prior to age three (Hutton & Caron, 2005).

Kanner first described autism in children in 1943, and created the term "autism" to describe the extreme aloneness as its characteristic (O'Callaghan, 2002). Other characteristics often associated with autism include engagement in repetitive activities and stereotyped movement, poor eye contact, difficulty in socialising with others, resistance to change in daily routines, and unusual responses to sensory experiences such as loud noise (Hutton & Caron, 2005). Helfin and Alaimo (2007) have it that majority of students diagnosed with autism have IQ scores categorising them with intellectual disabilities with only 25% to 33% having an average or above average IQ. Hence, these cognitive delays, sensory issues, communication challenges, aggressive behaviour and social skills if not managed may cause autistic children to be a liability both at school and at home (Ratajczak 2011). Steinfeld (2008) asserts that it has become very necessary for

educators to be prepared to appropriately respond to the needs of autistic children in the classroom.

According to O'Callaghan (2002), prevalence rates since the 1960s have ranged from 3.3 to 31 per 10,000 in North Dakota and Sweden but in recent times studies show an estimated significant yearly increase of almost 4% between 1966 and 1997 in London. The National Autistic Society (2016) asserts that the latest prevalence studies of autism indicate a 1.1% of UK's population of 64.4 million (Humby, 2016) may have autism; hence, over 695,000 people in the UK may have autism. Findings from a comparison study conducted in the US, between older and younger autistic cohorts showed an increase in cases of autism in younger cohorts between 1987 and 1992; though the situation improved after 1992 (Newschaffer et al. 2005).

The unfortunate habit of abandoning autistic children existed in the Ghanaian society though currently the situation has improved over the years (Daily Graphic, 2008). Per the researcher's observation, many autistic children are often left unattended to, not given the attention they need especially in the field of education. Such children may end up in despair and unable to realise their full potential in adulthood. This challenge may be attributed to the deficits in communication, intellectual and social skills, and aggressive behaviour that autistic children exhibit that affect their interpersonal relationships (Ratajczak 2011) which most people are not willing to be associated with. Autistic child education should be structured to address their peculiar needs – bridge their communication gaps, enhance social skills, behaviour and intellectual abilities to make them better functioning adults and not social misfits.

Previously, autistic children in Ghana had no access to a well-structured curriculum in formal education until 1972 when schools such as the New Horizon Special School was established by Mrs. Salome Francois, the proprietress under the Ministry of Education and has been legally registered as a Voluntary, Non-Profit making and charitable institution in Ghana (New Horizon Special School, 2005). New Horizon Special School till date provides day school education for children and vocational training and employment for adults who have intellectual disability and learning difficulty. Presently, students aged four to fifty plus years attend the school (New Horizon Special School, 2005). New Horizon Special School supports individuals and families affected by Autism Spectrum Disorder, and fosters education and independence for every child to enable them maximize their potential. A detailed profile of the New Horizon Special School may be found in Appendix D.

As a volunteer at the New Horizon Special School, the researcher's discourse with the school's Education Coordinator revealed that currently, the school adopts an individualized goal oriented training structure, with home-school collaboration that assists stakeholders work towards the development of each child. This is commonly referred to as the Individualized Educational Programme (IEP). The school fundamentally employs routines for autistic children which include Occupational Therapy (OT), Sensory Integrated therapy (SI), a well-structured environment with visual supports or Training and Education of Autistic and Related Communication Handicapped Children (TEACCH), and the traditional teaching methods in the child's training as supported by (Autism Speaks, 2017).

However, teachers and the school's Education Coordinator stated that existing therapies over time have not shown significant improvement in communication, intellectual deficits and Numeracy and Literacy education of the autistic children. Nevertheless, the educators admit that these therapies have helped decrease aggressive behaviour and develop self-help skills such as brushing of teeth, washroom training and feeding over varying lengths of time based on the severity of autism symptoms.

Researcher's further discussions with the Principal of the New Horizon Special School showed that currently, autistic children are engaged in some form of art as part of their training. Also, it was disclosed that art therapy students visit the school from the UK and USA to execute their project work without assisting teachers to apply art therapy in their instructions in Numeracy and Literacy.

Art therapy may be defined as a form of therapy in which creating images and objects play a central role in the psychotherapeutic relationship established between the art therapist and client (Naumburg, 2004). Art is therapeutic and has the power to change people and situations as it provides physical and emotional relief to life situations (A'Court, 2010).

Autism Speaks (2014) mentions that children on the autism spectrum struggle with communication, therefore, traditional psychotherapy is not a reasonable option for them, but art therapy is suitable for them (Moffitt, 2011). Furthermore, art therapists report that children with autism who engage in one-on-one sessions show an improved ability to imagine and think symbolically, develop their ability to recognize and respond to facial expressions with a new ability to manage sensory issues (Moffitt, 2011).

Studies have shown that Art Therapy is the most suitable method for developing the intellectual capacity of autistic children (Ullmann, 2011). This is due to the fact that autistic children are more advantaged in their visual prowess as compared to their intellectual abilities. Given that children with autism are so visually oriented, it makes perfect sense to engage them in art activities, be it formally with an art therapist, casually in other classes or at home. (Moffitt, 2011). Rudy (2016) states that autistic children have the ability to think in pictures and can put that ability to good use in processing memories, recording images and visual information, and expressing ideas through drawing or other artistic media.

Classroom behaviour, communication and intellectual abilities are key for the effective education of individuals including autistic children (Randi et al. 2010). The strengths of autistic children as outlined by Rudy should be capitalized on to enhance their output in the classroom. Besides, it is possible for autistic children to improve their communication, intellectual abilities and education in Numeracy and Literacy, in the New Horizon Special School, through art therapy (Moffitt, 2011; Rudy, 2016; Ullmann, 2011) as used in remedial activities.

1.2 Statement of the Problem

The principles that govern special needs education universally as documented by Bauer, Olgeirsson, Pereira, Pluhar and Snell (2003) require that the educational legislation within countries should clearly state inclusion as a goal and communicate policies towards inclusive education should be backed by a legal framework. Furthermore, educational policies should take into consideration the needs of all learners with special needs, should provide action plans within strategies, should be multi-phase and trans-sectoral and actively encourage inter-

sectoral cooperation. It should also take into account international level policies and initiatives. (Bauer et al. 2003).

According to Ministry of Education (2013), Ghana, the Ghana Education Service (GES) has the “overarching goal to redefine the delivery and management of education services to respond to the diverse needs of pupils/students within the framework of Universal design for learning” (p. 15). Unfortunately, the policy is silent on how autistic children should be taught subjects such as Numeracy and Literacy in special needs schools. It rather focuses on personnel development, assessment, accessibility and infrastructure of the schools. It is worth noting that, all children including those with disabilities and special needs have a constitutional right to free primary education (Citizens Information Centre, 2015). In Ghana, this right is included in the country’s Constitution (1992 article 25).

The researcher’s initial interactions with New Horizon Special School triggered concerns of how teachers of autistic children in these schools may achieve effective teaching and learning. Issues of the unavailability of a suitable curriculum for training autistic children in Ghanaian autism schools, the environmental factors or conditions that facilitate an autistic child’s education, and the qualification of teachers who ought to train autistic children among other concerns provoked this research.

This research seeks to investigate the effectiveness of instructional strategies and existing therapies used at New Horizon Special School to facilitate the education of autistic children in Numeracy and Literacy, and propose Art Therapy as a worthy inclusion in the training of autistic children to enhance their intellectual abilities.

1.3 Objectives of the Study

1. (a) To identify and describe the characteristics of the autistic children at New Horizon Special School in Accra?
(b) To identify and describe the existing therapies employed in teaching Numeracy and Literacy at New Horizon Special School in Accra?
2. To design and propose art therapy programme as an intervention for educating autistic children in Literacy and Numeracy at New Horizon Special School in Accra.
3. To pre-test and evaluate the effectiveness of the developed art therapy intervention in teaching Literacy and Numeracy at New Horizon Special School in Accra.

1.4 Research Questions

1. (a) What are the characteristics of the autistic children at New Horizon Special School in Accra?
(b) What are the existing therapies employed in teaching Numeracy and Literacy at New Horizon Special School in Accra?
2. How can art therapy as an intervention be employed for educating autistic children Literacy and Numeracy at New Horizon Special School in Accra?
3. How can art therapy influence teaching Literacy and Numeracy at New Horizon Special School in Accra?

1.5 Delimitation

Geographically, this study was limited to New Horizon Special School in Accra, Greater Region of Ghana. Again, the research was focused on autism in children, instructional strategies and existing therapies that were employed by their

educators and their impact on their education. The research is aimed at determining how the introduction of Art Therapy as an intervention will improve teaching and learning the two subjects – Numeracy and Literacy taught as part of the academic training of autistic children in New Horizon School.

1.6 Limitations

1. Some children did not attend school regularly and absenteeism was a disadvantage to the study. This is because autistic children require consistent and repeated activities, or routine for effective behavioural change or development.
2. Teachers are constantly occupied by autistic children, therefore, the researcher experienced a lot of disruptions during interview sessions as the teachers had divided attention.

1.7 Definition of Terms

1. Amygdala – The amygdala is the almond-shaped part of the nervous tissue of the brain that is responsible for emotions, survival, instincts and memory. There are normally two amygdalae with one on each side of the brain.
2. Autism – Autism is a complex neuro developmental disorder on the Autism Spectrum Disorder (ASD) that significantly affect the behaviour, communication skills and intellectual abilities of victims.
3. Autism Spectrum Disorder – ASD refers to specific group of varying developmental and behavioural disorders, including autism and Asperger's syndrome among others.
4. Autistic child – An autistic child is an infant or adolescent who exhibits delayed speech and communication difficulty; repetitive, aggressive and

sometimes uncontrollable behaviour; and learning deficits. These symptoms may be mild or severe.

5. Art – Art is a means of expression and communication of one's feelings or emotions, thoughts, desires, challenges and needs
6. Art Therapy – Art Therapy combines the visual art, in the form of painting, drawing, sculpture, and psychology to bring healing to persons with mental illnesses, communication and learning deficits, depression and the delinquent, among others with the help of the therapist.
7. Autophagy – Autophagy is a breakdown of components including synapses connections in the brain that are dysfunctional
8. Axons – Axons refer to long, thin structures that emanates from a neuron and outputs information to other neurons in the brain.
9. Cortex – The cortex is the part of the brain responsible for thoughts and processing information from the senses.
10. Dendrites – Dendrites are tree-like structures in the brain. They are short branches of a nerve cell along which impulses received from other cells at synapses are transmitted to the cell body.
11. Education – Education is a conscious process that involves providing holistic training to a learner that ensures a desirable positive transformation in one's intellectual, social and physical well-being according to his individual needs, to make him well-functioning in his society.
12. MeCP2 – A protein that reduces the activity of genes in nerves that influence synapse formation or function.
13. Pica – Pica refers to an eating disorder where one eats inedible or non-nutritive substances.

14. Synapses – Synapse refer to the junctions between two nerve cells, consisting of a minute gap across which impulses pass.

15. Tuberous Sclerosis Complex (TSC)– Tuberous Sclerosis Complex is a disorder characterised by benign tumours across multiple organ systems.

1.8 Acronyms/Abbreviations

AACT	Autism Awareness Care and Training
ABER	Arts Based Educational Research
AS	Asperger Syndrome
ASD	Autism Spectrum Disorder
GES	Ghana Education Service
IEP	Individual Educational Plan
MDT	Multi-Disciplinary Therapy
NHSS	New Horizon Special School
PECS	Picture Exchange Communication Systems
SI	Sensory Integrated therapy
TEACCH	Training and Education of Autistic and Related Communication Handicapped Children
TSC	Tuberous Sclerosis Complex

1.9 Importance of the Study

1. The study will be of importance to educating autistic children. It is expected that autistic children will be found to have improved learning skills in Numeracy and Literacy as a result of Art Therapy intervention, hence, improving their intellectual performance. Findings will suggest that the use of Art Therapy in educating autistic children will have positive impact on their output and should therefore, be used in their intellectual training and general upbringing both in school and out of school.
2. The findings of this study will also benefit teachers of autistic children since the introduction of Art Therapy will help them deliver simple and appropriate methods of understanding and educating autistic children to help them improve their coping skills in Numeracy and Literacy lessons.
3. Findings of this study may serve as a special needs policy guide for the Ministry of Education and Ghana Education Service (GES) and other stakeholders for the development of appropriate teaching models for educating autistic children.

1.10 Arrangement of the rest of Text

Chapter Two documents and intellectually discusses existing literature on Autism, Education, Benefits of Education, Art Therapy and Autistic Child Education, among others. Chapter Three explains the research methods and design used in the data collection process. It also details sampling techniques, population size, and research instruments used for the study. Chapter Four comprises discussions of research results/findings and analysis of the data gathered from New Horizon Special School. Chapter Five is composed of the summary, conclusions and

recommendations of the study that was conducted in New Horizon Special School.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Autism

Educating others requires an understanding of the nature of the learners, content to be taught and the society in which the learning takes place (Hurwitz & Day 2007). In view of this the researcher reviewed related literature on autism, autistic children and education, the development of children, child art processes and interpretation, art therapy and policies for autistic education for the study.

2.1.1 What is autism?

Autism as Emery (2004) notes, is a pervasive, chronic, neuro-developmental disorder, and a member of the Pervasive Developmental Disorders (PPDs) as purported by Ratajczak (2011). Autism Speaks Organization (2014) suggests that autism is on the Autism Spectrum Disorder (ASD), with accurate diagnosis by the age of 2 (Stone & Turner 2005). Indicating that Autism is an ASD implies that it occurs in unpredictable degrees and impacts people in many different ways (Bradley n.d.). According to Joshi, Percy, and Brown (2002), it is “generally understood that autism is a complex developmental syndrome representing a heterogeneous group of disorders with similar symptoms, but with different biological etiologies.” (p. 2). Understanding what autism is, its causes and effects helps to develop interventions and breakthroughs to improve coping skills among individuals with autism (Joshi et al. 2002).

Leo Kanner, who first described autism in detail is emphatic in his assertion that autism is not genetic, although some children are observed to develop it in their first year of childhood (Joshi et al. 2002). He disputes that autism is associated with intellectual disability because autistic children pass IQ tests (Autism, 2016). However, later, findings of early studies into the causes of autism confirm that autism is genetic as identical twins have a higher chance of developing autism because they share all genes, while fraternal twins who share some genes are at a lower risk of developing autism. In addition, it was established that siblings of autistic individuals stand a 2% - 10% of developing autism (Autism, 2016). Ratajczak (2011) confirms that autism is caused by genetic mutations and/or deletions among other causes such as viral infections and encephalitis following vaccination which may result in the inflammation of the brain.

Likewise, Baron-Cohen (2004) states,

“Ultimately, the cognitive and neural abnormalities in autism spectrum conditions are likely to be caused by genetic factors. The sibling risk rate for autism is approximately 4.5%, or a tenfold increase over general population rates. In an epidemiological study of same sex autistic twins, it was found that 60% of monozygotic (MZ) pairs were concordant for autism versus no dizygotic, (DZ) pairs.”

According to Stone & Turner (2005) the recurrence rate of autism in siblings has been reported to be between 2% and 8%. On the other hand, Landrigan (2010) refutes claims that autism may be caused by vaccines indicating that it is not evidence based. He indicates that environmental factors are evidently linked to autism owing to external exposure of the sensitive developing brain to

thalidomide, misoprostol, and valproic acid; maternal rubella infection; and the organophosphate insecticide, chlorpyrifos during pregnancy. Furthermore, Landrigan (2010) attributes “copy number variants” to autism though it accounts for a small number of cases. There is undoubtedly a correlation between autism and genetics among other causes.

2.1.2 Characteristics of autism

Attwood (2000) reveals divergent descriptions of autism by Leo Kanner and Hans Asperger. Kanner believes that autism in children is represented by an extremely quiet and aloof child while Asperger described the autism in children to be characterized by speech and active social interaction. “Autism is diagnosed when a child or adult has abnormalities in a triad of behavioural domains: social development, communication, and repetitive behaviour/obsessive interests” (Baron-Cohen 2004). Autism Speaks (2014) asserts that individuals on the ASD exhibit three main characteristics – difficulty in social communication, social interaction and social imagination – though in varying degrees which may require lifelong support in some cases. Autistic individuals may be a worry for family members, may be a life-long liability and sometimes be physical threat to autistic individuals themselves and others around them (Ratajczak 2011). Kanner in his observation of 11 children with autism identified “extreme aloneness from the beginning of life and an anxiously obsessive desire for the preservation of sameness” (Joshi et al. 2002:1).

Autism (2016) identified the central feature in autism is unusual response to the environment and social problems. Autism is also representative of “absent speech, high unusual, aggressive and injurious behaviour” with abnormally early

symptoms showing between 3 – 6 months (Goldberg, 1998). According to Ratajczak (2011) autism is characterized by “impaired communication and social interaction and repetitive behaviours” (p. 68). Autism is characterized mainly by impaired social interaction, communication difficulties and repetitive behaviour (Bilimoria, 2016).

Autism is marked by behaviour, social interaction, communication and sensory sensitivities difficulties though not all these symptoms are typically exhibited by individuals on the spectrum (Autism Spectrum Australia 2016). Basically, autistic individuals have delayed language development, they may be over sensitive or lack emotions and sensitivity, and social and behavioural deficits (Rocky Point Academy 2009). Emery (2004) indicates that language in child development begins with parents talking to and mirroring their child in parent-child attachment, and attributes language deficits and the inability of an autistic child to perceive and parents as something to relate to in early development.

Though clinical experience and research show similarities in behavioural profile in Autism and Asperger’s Syndrome (AS) individuals, it is suggested that AS is a form of autism with a high intelligence quotient as asserted by Attwood (2000), but therein lie a difference. According to Attwood (2000) severe autism in children as described by Leo Kanner is represented by an extremely “silent and aloof child”, while Hans Asperger observed autistic children had no language deficits and were sociable. Bhandari (2015) in describing AS mentions autism related characteristics with an advanced, formal way of speaking AS children; sometimes beyond their age. Therefore, the difference between Autism and AS is the disparity in language development. Asperger’s Syndrome was used by Hans

Asperger to refer to high functioning autistic individuals with speech (Joshi et al. 2002).

The difference between autism and AS is that, in autism the child will learn to talk at a very later stage, often saying no words by the age of two and will have intellectual disability while an AS child will talk on time and have no intellectual disability. It is worth noting that they have social deficits in common and usually have narrow interests (University of Cambridge , 2016). The researcher's understanding of the difference between autism and AS was necessary to confirm diagnosis that all participants were indeed autistic with the help of a checklist as they are closely related.

Fundamentally, Autism is a genetic medical condition of a neurodevelopmental deficiency exhibiting itself in engagement in repetitive activities and stereotyped movement, poor eye contact, difficulty in socializing with others, resistance to change in daily routines, and unusual responses to sensory experiences such as loud noise by the autistic child usually starting at age 2, and affecting the behaviour, intellect and over all well-being of autistic individuals.

2.1.3 The autistic brain

The autistic brain is currently one of the biggest mysteries in neuroscience. Several mouse model scientific experiments and research are ongoing to gain an understanding into how autism arises and how the autistic brain looks and functions when compared with the typical brain (Bilimoria, 2016). The autistic brain may be diagnosis as early as about 18 months as autism characteristics are exhibited in early infancy (University of Cambridge , 2016).

It is believed that autism is higher in males than females. Hence, studies into foetal testosterone revealing that “foetal testosterone shapes brain development to alter an individual’s cognitive profile by binding to androgen receptors in the brain and the amygdala being one region that is rich in such receptors. This establishes that the amygdala is under-active when autistic individuals are trying to interpret facial expressions. Cambridge researchers have shown that higher prenatal testosterone levels are associated with reduced social skills but superior attention to detail in infants which are fundamental characteristics of autism (University of Cambridge, 2016).

A mouse model study by Bilimoria (2016) reveals that the autistic brain is affected by neurodevelopmental disorders at the junction of nerve cells, disruption in brain connectivity during development both internally and with the world, and altered synaptic connections. The autistic brain has challenges adapting based on inputs from the outside world.

According to Bilimoria (2016) the disfunction at the junction of two nerve cells where impulses are passed may be attributed to the Rett Syndrome and Fragile X Syndrome which are directly linked to autism . Often in the Rett Syndrome affected genes of the female autistic brain create MeCP2. The absence of MeCP2 causes dendrites and overly undeveloped synapses.

In the Fragile X Syndrome, protein FMRP limits the formation of many other proteins at the synapses which when is absent and leads to wildly grown dendrites with longer and thinner spines than usual (Bilimoria, 2016). Tuberous Sclerosis Complex (TSC) is a rare syndrome which often but not always involves autism (Autism Speaks Inc., 2014). Tuberous Sclerosis Complex comprises the abnormal

development of axons causing a separation in the different regions of the brain particularly the language and social reasoning parts (Bilimoria, 2016).

Studies into the brain tissue of autism individuals show that there are excess synapses in the autistic brain caused by a relatively slowed down synaptic pruning process that occurs during brain development (Autism Speaks Inc., 2014). Furthermore, it is worth noting that synapses formation occurs in the cortex of the infant brain during development, but are eliminated by about half at late adolescence in a typical brain. Whereas in the autistic brain, only 16% of synapses are pruned by late adolescence owing to dAmyged parts, an abnormal autophagy pathway and large amounts of a protein called mTOR which reduce brain cells' pruning capacity (Autism Speaks Inc., 2014).

Temple Grandin in her book *The Autistic Brain*, describes her personal experience with autism and mentions that autistic individuals think in pictures (Cooke, 2003). Grandin (2014) explains that sensory overloads in autistic individuals are better tolerated when initiated. Senses like hearing, sight, and hand-eye coordination may be impaired or occur in fragments or with difficulty. Such deficits are a result of a much less organized Axon Projection Field in the primary visual cortex and Auditory Fields in the autistic brain. A Magnetic Resonance Imaging (MRI) of Temple Grandin's brain also show abnormalities in the left hemisphere of her brain. Temple Grandin says, "all my thinking uses specific examples to create concepts" (Grandin 2014).

2.2 Art Therapy

According to Malchiodi (2007) art therapy is a broad field that has no single definition because it brings together two disciplines of art and therapy in a way

that improves the lives of people emotionally, mentally, physically through self-expression. Naumburg (2004) corroborates Malchiodi's assertion (2007) that several conflicting definitions of art therapy have been made since the term and later the profession first emerged in the late 1960s. Adrian Hill, British artist, coined the term "art therapy" in 1942 to describe the therapeutic process of image making as he expressed while he was recovering from tuberculosis, and believes that the process of art making fully captivating the mind and fingers (Naumburg 2004).

According to Naumburg (2004), Art Therapy may be defined as a form of therapy in which creation of images and objects are pivotal in the psychotherapeutic relationship between the art therapist and client. The definition of Art Therapy from the Oxford University Press (2015) is "a form of psychotherapy involving the encouragement of free self-expression through painting, drawing, or modelling, used as a remedial or diagnostic activity." (p.1)

Kramer (1993) asserts that Art therapy is a combination of two disciplines; art and psychology. Art satisfies the quest of self-expression of man while psychology reveals the conscious and unconscious minds of people. Art therapy therefore, addresses the needs of different groups of people including children and adolescents, the sexually abused, delinquent, mentally retarded, traumatized, individuals with learning disabilities with the assistance of an art therapist (Kramer, 1993).

"Art therapy is a form of expressive therapy that uses the creative process of making art to improve a person's physical, mental and emotional well-being. This creative process involved in expressing one's self can help to resolve issues as

well as develop and manage their behaviours and feelings, reduce stress, and improve self-awareness” (Art Therapy 2016). Art therapy is based on psychology and the theory that art is naturally therapeutic, and makes use of various art materials as a means of expressing thoughts and feelings through visual representation (Evans 2009).

Art therapy is not art education, it is not doing art and craft as Herskovitz (2013) notes; rather, it is a mental health profession (American Art Therapy Association 2013). Deducing from the definitions and description above, Art Therapy is a form of psychotherapy that makes use of the visual arts in a therapeutic process allowing free self-expression to address and manage the needs of people, aimed at improving their lives and enhancing their total well-being with the direction of an Art Therapist.

2.3 Autism and Art Therapy

Mahgoub (2015) stresses the significant contributions of art to a child’s education and development. Autism specialized interventions that start at young ages have been found to contribute to significant gains in cognitive, social and language functioning (Stone & Turner 2005).

According to Evans and Dubowski (2001), art therapy has been proven to be a form of creative therapy that is most promising and beneficial to the development of social skills of high functioning autistic individuals. Evans (2009) indicates that art therapy is helpful for autistic individuals by allowing them to express themselves through art and provides an overall assessment of the autistic client. The findings of a study by Witt (2012) emphasizes the view that art therapy is the most effective means of treating individuals with autism.

Art therapy as a self-regulatory tool addresses the sensory integration difficulty of autistic children (Herskovitz 2013). All other interventions have their place in supporting autism but art therapy affords the therapist and the autistic child the process of assessing and addressing challenges of autism, this is more important than product as noted by Emery (2004) and corroborated by Herskovitz (2013).

However, there are individual opinions that refute benefits of art therapy to autism. Hearst (2015) in a survey with autistic adults and parents of autistic children, found that some people did not appreciate the therapeutic effect of art. Hence, their assertion that art therapy was ineffective. An autistic adult mentioned that in his childhood he communicated better through art in the absence of a therapist. In my opinion, it was his empathy triad playing out (Baron-Cohen 2004) – he may have exhibited severe social deficits.

Art making affords autistic children the chance to represent their thoughts and emotions, an opportunity to relate and acquire self-awareness which becomes a basis for relating to enhance their growth and development (Emery, 2004). Therefore, it is possible for autistic children to improve their communication, social and intellectual abilities through the intervention of Art Therapy by capitalizing on their greatest strength of visual and spatial intelligence both in school training and at home.

2.3.1 Art Therapy, The Art Therapist and Autism

According to Emery (2004), willful actions in autism are driven by an ability to identify one's thoughts and intentions. As a therapist working with autistic children, in as much as it may be more difficult to build a relationship with them, art essentially provides a safe environment that will lead them towards trusting

you (Emery 2004). Acquainting yourself with the autistic child helps to reduce empathy and facilitate the therapeutic process. It is worth noting that though the idea of conclusion or pleasure of a session with an autistic child may not be crucial, the therapeutic process is (Emery 2004).

In “Art as Therapy with children”, Kramer (1993) suggests that it is important that the therapist directs or guides the child without interfering in his or her art making process as this will disrupt the thought process and development of art forms by the child. The therapist is permitted to do so, only when the child is transitioning to another stage of art development. According to Buchalter (2004), the therapist needs to determine the nature of the group or population, and client needs and abilities when choosing a particular activity, tools and materials.

Group sessions have been proven to have curative advantages for autistic persons according to Malchiodi (2007) in the form of group drawings, paintings and mural making (Buchalter, 2004). Some curative potentials identified by Malchiodi (2007) include instilling hope among the population due to a supportive community of people, the opportunity for social interactions and support which has been connected to health and well-being, the feeling of universality, expression of painful feelings and experiences and the sense of altruism – a sense of help for one another in difficult times.

2.4 Autism and Education

Studies show that the rate of autism over the years has increased. Autistic individuals may be a worry for family members, may be a life-long liability and sometimes be physical threat to autistic individuals themselves and others around them (Ratajczak 2011).

Grandin (2014) asserts that autistic learning is about memorizing, scripting and categorising information. Autistic children should be taught with specific examples because, their thinking and concept development is based on concrete examples they are provided (Grandin 2014). Individuals with autism have special interests around which they may develop as noted by Bradley (n.d.). Implicitly, from the Gardner's theory (Silveira 2007) educators should capitalize on the intelligences and strengths of autistic children to facilitate their learning process.

2.4.1. Autism Education Policies

Vital documents such as the 1992 Constitution; National Disability Policy, June 2000; Persons with Disability Act, June 2006 and the Special Educational Needs Policy Framework (2005) elaborate on the Ghanaian government's commitment to Inclusive Education (IE) and legislations that protect the rights and spell out the privileges of persons with disabilities (Anthony 2010).

2.5 Child Art and Development

The subsequent literature provides an overview of the artistic characteristics of children and its effect on their intellectual growth as documented by theorists. Grandstaff (2012) identifies and discusses the early artistic development theories and views that were researched between 1920 and 1980, by Viktor Lowenfeld, Jean Piaget, Lev Vygotsky and Howard Gardner as contributors to child cognitive development.

Children artistically explore their world by creatively and responsively engaging commonly in drawing with the help of an instructor, with respect to their level of development as indicated by Hurwitz and Day (2007) is considered a vital part of a child's education and early development (Twigg & Garvis 2010). John Bowlby

scientifically demonstrates and emphasizes the importance of parent-child attachment to the healthy development of a child, which has placed an increased importance on child art at the representation of objects at each stage of their growth (Emery 2004).

According to Grandstaff (2012), Lowenfeld and Piaget considered the stages of artistic development relating to the child's age and characteristics of drawings. Vygotsky focused on social, interpersonal, and language skills in relation to artistic development, and Gardner examined graphic symbols and expressive qualities of children's drawings." In this light, the researcher sought to review child art and development from the views of the above-mentioned theorists.

2.5.1 Child art

Pablo Picasso once said, "Every child is an artist. The problem is how to remain an artist once he grows up"(Goodreads Inc 2016). Kramer (1993) in *Art as Therapy with Children* explains that art therapy reflects the emotions and the feelings, conscious and unconscious minds of the child artist as it meets their specific needs, with the support of the therapist to get in touch with feelings that cannot be expressed in words (Waller 2006). Humans have an inherent need to relate to the world through art and creativity, Kramer (1993) emphasizes and for this reason children also create and draw (Emery 2004).

Art Therapy (2016) explains that one does not need to be talented or artistically inclined to receive the benefits of Art Therapy; there are professionals to help clients or individuals through communication in the healing process to reap the benefits. The success of a child's art is not in the physical appearance or beauty of the child's art because the ability of a child to express himself through art is

largely dependent on the child's talent. Rather, the success of a child's art is his ability to fully express himself in art forms to be interpreted by the therapist (Kramer, 1993).

In essence, art creation in Art Therapy is not limited to the artistic child or specific age group because it is simply a medium of communication. Therefore, if one is able to express his or her full emotion through artistic expressions, it is enough for the Art Therapist to work with. Children at different stages of development express themselves in different forms. At each of these stages, children express themselves differently in drawings.

In the development of a child, "objects that are drawn can be related to because they remain a constant in the child's inner experience – object constancy, because they are kinaesthetically attached to their artistic expressions and can relate to the drawing as they execute them" (Emery 2004). Furthermore, though object constancy diminishes as a child grows due to the onset of intellectual drawing, symbolism is present and artwork remains highly expressive. Observing the art of the autistic child does not show the child's ability to imagine, nor an inability for symbolism. However, they relate to their art forms and art expressions can emanate from their inner experiences.

2.5.2 Child development

Viktor Lowenfeld - Viktor Lowenfeld, propounded the theory of the Stages of Artistic Development – Scribble (1-3 years), Pre-schematic (3-4 years), Schematic (5-6 years), Drawing Realism (7-9 years), Pseudo-Naturalistic (10-13), Decision stage (13-16). There is a progressive improvement in the art of children as they

grow. The older the child the more realistic, reasonable and representational of the world around them their art becomes (Fussell, 2011; Lowenfeld & Brittain, 1987).

Viktor Lowenfeld's ground breaking book, *Creative and Mental Growth* contains his philosophy of art education, providing "every classroom teacher with an understanding of the intimate relationship between growth and creative expression" while advocating that freedom of individual creative expression could lead to emotional, social, and psychological well-being (Lowenfeld & Brittain, 1987). *Childrens Art* (2002) documents Viktor Lowenfeld's Stages of Artistic Development as represented below:

Viktor Lowenfeld Creative and Mental Growth 1978

1. First Stage of Self Expression (Scribbling Stage) 2 - 4 years
2. First Representational Attempts (Pre-schematic Stage) 4 - 7 years
3. Achievement of a Form Concept (Schematic Stage) 7 - 9 years
4. Dawning Realism (Gang Age) 9 - 11 years
5. Pseudo-naturalistic (Stage of Reasoning) 11 -13 years

Jean Piaget - The Piaget's theory comprises thoughts of "reasoning, language, scientific reasoning, moral development and memory" (Piaget, 1920) which forms part of the focus of this study, hence, its relevance to child development. Piaget (1920) indicates that children learn and create their own knowledge, and are intrinsically motivated.

Conferring from Cherry (2016), Piaget developed a theory of four distinct intellectual or cognitive stages of development, emphasizing the self-initiated discovery (McLeod, 2014) through the observation of his daughter and nephew

(Piaget, 1920), which include; the sensorimotor stage (from birth to age 2), the preoperational stage (from age 2 to about age 7), the concrete operational stage (from age 7 to 11) and the formal operational stage, which begins in adolescence and spans into adulthood (Grandstaff, 2012; Piaget, 1920). Gallagher (1999) corroborates McLeod's (2014) emphasis on Piaget's opinion that "the most important cognition was in children themselves". Prior to the stages of development, McLeod (2015) asserts that there are two fundamental components to the Piaget's theory which include Schema – building blocks of knowledge, and a process of adaptation in which the learner moves from one stage to another – equilibrium, assimilation and accommodation.

Piaget (1920) explores and throws more light on the learning activities that occur during the four stages of development, describing them in sub-stages. During the Sensorimotor stages, the young learner explores the world through sensory and motor activities such as grasping, sucking, and banging for attention, which he does repeatedly till he forms a mental representation of behaviours practiced by others. This is termed "Deferred Imitation" (Piaget 1920).

At the Pre-operational stages the child develops knowledge through language and mental imagery through what he describes as Egocentrism and Centrist (Piaget 1920). Here, the child perceives the world from only his point of view and focuses on objects in static states rather than in motion as in Egocentrism and Centrist respectively.

When the child begins to learn through Concrete Operations, he is not able to think abstractly but develops a "conservation concept" as described by Piaget (1920) where changing the arrangement or appearance of an object does not alter

significant or vital characteristics. The learner by this stage has learned and fully grasped what distinguishes one object from another and therefore, is certain of his knowledge of that object by tangible mental impressions so that the object can be identified at any given time.

Finally, at the Formal Operational stage the individual thinks and reasons abstractly and hypothetically, thereby, acquiring knowledge. “Hypothetico-deductive reasoning” comprises counterfactual thinking and problem solving skills is required at this stage (Piaget 1972). Piaget did not directly relate his theory to education but, creates the need for the psychosomatic readiness of a learner to acquire knowledge. It is therefore, necessary that a teacher ensures that children are at the right stage of cognitive development to learn and should encourage active learning by facilitation (McLeod, 2015).

Lev Vygotsky - Lev Vygotsky’s research focused on the social contributions and influence on the cognitive development of a child (Grandstaff 2012), which Piaget’s theory is silent on as (Piaget, 1920) and argues that the social environment contributes to the intellectual development of a child (Gallagher, 1999). He developed the Vygotsky Circle also referred to as the “Vygotsky Boom” which incorporated the ideas of social and interpersonal relationships (Yasnitsky 2011) and believes that “learning occurs in zones” (Grandstaff 2012).

Vygotsky’s theory of cognitive development is embedded in two main principles namely; the More Knowledgeable Other (MKO) and the Zone of Proximal Development (ZPD) (McLeod, 2014). The two principles are related, where the ZPD tells what a child can do on his own and the MKO what he can achieve with the help of another, often an adult, more knowledgeable person or computer as

required in the former. According to Brooks (2009) the underlying principles that Vygotsky proposes are firstly “meaning and the role of spontaneous and scientific concepts, and secondly the development of higher mental functions” (p. 2). Furthermore, Gallagher (1999) has Vygotsky’s fundamental theoretical framework to be “children construct their own knowledge, development cannot be separated from its social context, learning can lead development, and language plays a central role in mental development.”

Language plays two roles in cognitive development – it is the main means by which adults transmit information to children and becomes a powerful tool for intellectual adaptation (Saul McLeod 2014). Brooks (2009) proposes that Vygotsky’s theory provides a better avenue for identifying, interpreting and working with children’s drawings since thought is not always associated with speech identifying other mediation tools to be “symbols, diagrams, drawing, writing and algebraic symbols” (p. 12).

By extension, Vygotsky’s theory discourages the traditional mode of teaching through transmission and encourages a collaborative reciprocal process between teacher and student to facilitate understanding in students (“Social Development Theory (Vygotsky)”, 2016). For effective teaching and learning to take place among autistic children, it is essential that there is an established, appropriate “language” or means of communication that considers and addresses their communication and speech deficits.

Howard Gardner - Gardner (1983) detailed a new model of human intelligence which was an improvement on the traditional view that intelligence was a single kind that could be measured by regular IQ tests (Strauss 2013). The Gardner’s

Theory of Multiple Intelligence suggests that “the traditional notion of intelligence, based on I.Q. testing, is far too limited” (Armstrong 2013). It is a theory that differentiates intelligence into specific primary sensory modalities instead of perceiving intelligence to be dominated by one single general ability. It is worth noting that, multiple intelligence is not equal to learning styles (Strauss, 2013).

According to Gardner, “Intelligence is a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture” (Gilman 2001). According to “Multiple Intelligence (MI) – Howard Gardner,” (n.d.) Gardner describes intelligence to be: “The ability to create an effective product or offer a service that is valued in a culture”, “A set of skills that make it possible for a person to solve problems in life” and “The potential for finding or creating solutions for problems, which involves gathering new knowledge.” Per Gardner’s descriptions, intelligence may be said to be one’s ability to solve problems or make products that can be appreciated and valued in most societies.

In his book, “Frames of the Mind: the Theory of Multiple Intelligences” Gardner proposes 7 intelligences and added the last 2 in “Intelligence Reframed” in 1999 (“Multiple Intelligence (MI) - Howard Gardner”, n.d.). According to Silveira (2007), the 9 intelligences are: Verbal – linguistic intelligence, Logical – mathematical intelligence, Spatial – visual intelligence, Bodily – kinesthetic intelligence, Musical intelligence, Interpersonal intelligence, Intrapersonal intelligence, Naturalist intelligence, Existential intelligence.

For a child to learn best, the instructor should capitalize on his intelligences as each child has different cognitive strengths, influencing how a child perceives the world. Mehta (2002) assert that we have all eight intelligences in varying degrees, working together in complex ways; most individuals are able to develop some of these intelligences to certain competencies. The Gardner's theory of Intelligences provides instructors with a basis for organizing and delivering instructions, and reviewing curriculum assessment (Gardner & States 1999).

2.5.3 Cognitive development and autism

Pellicano (2010) establishes in a three-year study with 37 ASD children that the cognitive abilities of persons with autism improved considerably over the period. In the study, each child's patterns of performance showed that not all children with ASD have the same cognitive strengths and weaknesses. At the end of the study most children improved in appreciating other's thoughts and feelings, had better planning skills, could regulate and control their thoughts and actions (Pellicano 2010).

The "mind blindness theory" of autism reveal empathizing deficits – social, communication, imagination of other's minds and systemizing strengths – islets of ability, obsession with systems and repetitive behaviour (Baron-Cohen, 2004). Autism Speaks (2014) identifies strengths of autistic individuals to be "ability to understand concrete concepts, rules and sequences; strong long term memory skills; computer skills; math skills; musical ability; artistic ability; ability to think in a visual way; ability to decode written language at an early age; honesty; ability to be extremely focused when working on a preferred activity; and excellent sense of direction".

Vivanti, Barbaro, Hudry, Dissanayake, and Prior (2013) theoretically and empirically demonstrate the association of Intelligence Difficulty (ID) with ASD. Theoretically, autism demonstrates modular impairments which involve selective difficulties in social processing. Yet, it cannot be overemphasized that engaging in socially rich environments contribute to structural and functional brain development. Hence, empathizing deficits in socialization among persons with autism impede cognitive development. Leekam (2016) maintains that, “the theory of the mind continues to be proposed as an important cognitive mechanism that can explain some key social functioning difficulties in autism.” (p.1)

Empirically, there are two schools of thought as to whether or not ID and autism characteristics are independent of each other. According to Vivanti et al. (2013) the “severity of ID and ASD are not related.” They stand by this argument owing to studies that reveal that the IQ of autistic individuals and the severity of their symptoms are not related – one may have low IQ and exhibit severe features of autism or vice versa. In a study to compare the intellectual ability of autistic children with a control group, it was found that language was evidently delayed in autistic children but there was less inconsistency in cognitive skills of children with autism (Long, Gurka & Blackman, 2011).

In conclusion, though the cognitive development of an autistic individual may be impaired or delayed by social deficits, there is no relationship between the severity of symptoms and their ID. The cognitive skills of autistic children cannot be undermined due to their unique strengths, with a strong sense for detail.

2.6 Theories and Models

The founders of Art Therapy in US – Florence Cane and Margaret Naumburg built their theories and models based on John Dewey, Jung and Freud (Buchanan 2014). Florence Cane modified art education techniques for use with children. Modern art therapists draw techniques from Shamanic cultures as well as the theories of Freud and Jung (Reevy, Ozer & Ito, 2010). The Naumburg theory, closely related to psychoanalysis is based on:

“Releasing the unconscious by means of spontaneous art expression; it has its roots in the transference relation between patient and therapist and on the encouragement of free association. It is closely allied to psychoanalytic theory. Treatment depends on the development of the transference relation and on a continuous effort to obtain the patient’s own interpretation of his symbolic designs. The images produced are a form of communication between patient and therapist; they constitute symbolic speech. (Naumburg in Ulman, 2001: 17)” (Naumburg 2004:1).

John Dewey, a pragmatist, believed that human beings learn through a 'hands on' approach emphasizing the need to learn by doing – Progressive education. Dewey proposed that students must interact with their environment in order to adapt and learn, and believed that the same idea was true for teachers and students to learn together. His view of the classroom was deeply rooted in independent ideals, which promoted equal voice among all participants in the learning experience. He believed in interdisciplinary curriculum that focuses on relating multiple subjects in the classroom ("John Dewey on Education: Impact & Theory", 2016).

“Freud believed that when we explain our own behaviour to ourselves or others (conscious mental activity) we rarely give a true account of our motivation. This is not because we are deliberately lying. Whilst human beings are great deceivers of others, they are even more adept at self-deception. Our rationalizations of our conduct are therefore disguising the real reasons” (McLeod, 2013). Jung shared Freud’s psychoanalytic theories on The Unconscious Mind, The Psyche, Defense Mechanisms, Psychosexual Stages of Development and Dreaming (McLeod, 2013); though he held different opinions (McLeod, 2014).

Jung believes that the libido is a source of psychic energy motivating a range of behaviours while Freud believes that it is specific to sexual gratification. Jung hold the view that the unconscious mind is a storehouse of repressed memories specific to the individual and their past, while Freud says that it is a storehouse for unacceptable repressed desires specific to the individual. Jung says that one’s past experiences in addition to future aspirations cause people to behave in one way or the other, but, Freud has it that past experiences particularly in childhood form behaviours (McLeod, 2014).

2.7 Conceptual Framework

Autism child behaviours are influenced by factors which include the functions of the autistic brain, deficits in coping and social deficits and the cognitive development of the individual. When these behaviours are managed in autistic child education it may result in an improved intellectual performance in NHSS. The researcher relied on the Naumburg Theory, comprising psychoanalytical theories and Art therapy as an assessment tool and remedy to deficits in autism behaviours. The Lowenfeld theory of the stages of artistic development, the

Vygotsky's Circle and Piaget's theory of cognitive development helped the researcher interpret autistic child art, while the Gardner's theory helped the researcher identify the intelligences, hence, skill sets of autistic learners at NHSS.

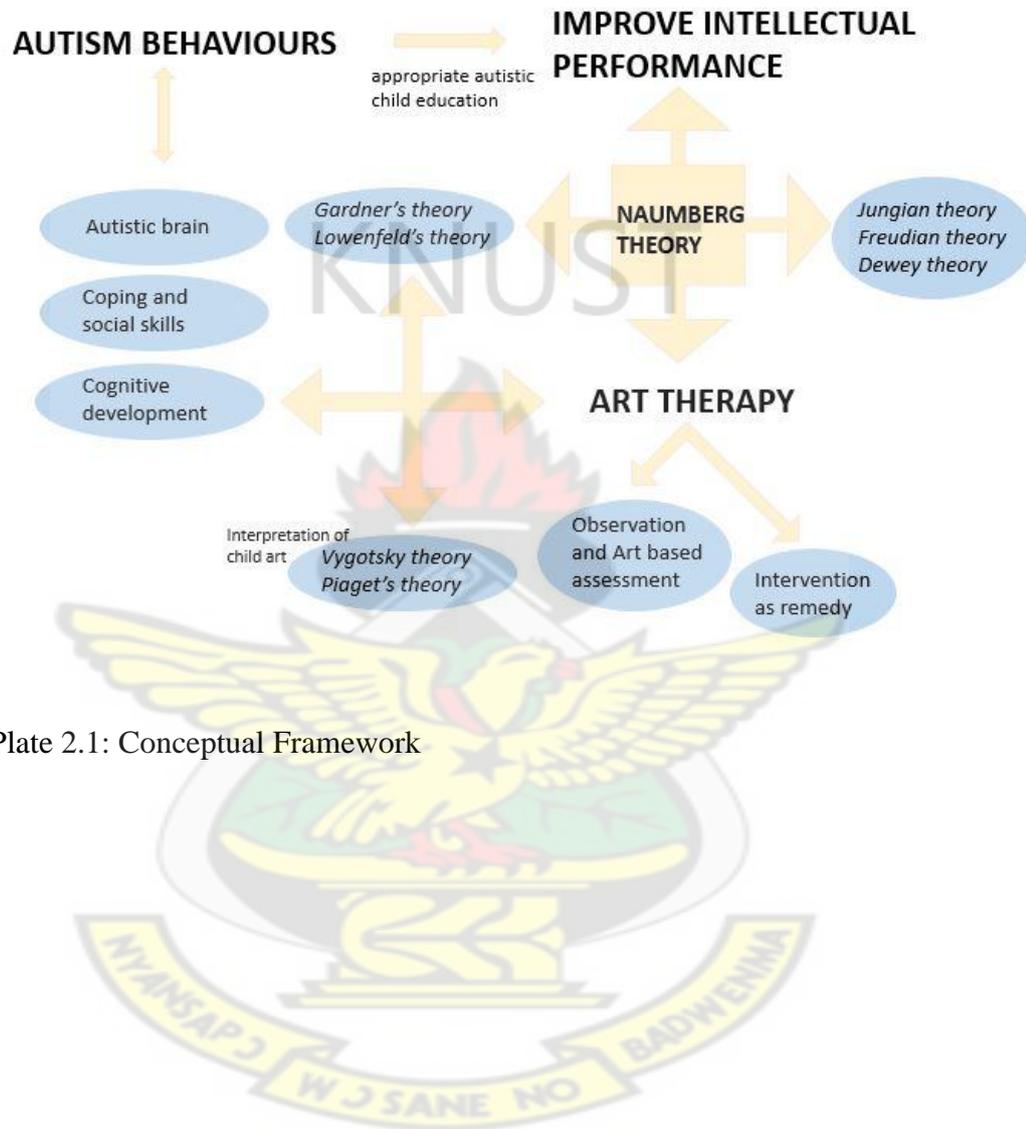


Plate 2.1: Conceptual Framework

CHAPTER THREE

METHODOLOGY

3.1 Research Design

The researcher employed the qualitative and quantitative research design to investigate the education of autistic children in Numeracy and Literacy at NHSS. According to Greenhalgh and Taylor (1997), qualitative research seeks a deeper truth by studying things in their natural environment, with an all-inclusive perspective that conserves the intricacies of human behaviour. The qualitative method is characterized by very detailed information that is rich and extensive, provides an in-depth understanding of the subject under study, and an analysis which is open to emergent concepts and ideas (Silverman, 2010). In the view of (Mack, Woodson, McQueen, Guest & Namey, 2011), a qualitative research in relation to a quantitative research affords the researcher a greater deal of flexibility in data collection processes and analysis.

Leedy and Ormrod (2001) corroborate William's (2007) explanation that qualitative research is less organised in description because it creates and builds new theories, and is based on inductive reasoning (Williams 2007). Atieno (2009) corroborates Williams (2007)'s view that qualitative studies are inductive in that the researcher builds abstractions, concepts, hypotheses and theories from details.

Griffin (2000) argues that the strengths and weaknesses of a qualitative research are dependent on the questions under investigation, in the context of psychology and education. Griffin (2014) further states that the strength of the qualitative research design is that it “focuses on the operation of social processes in greater

depth”, allowing multiple sources of data collection that afford the researcher the flexibility to examine sensitive issues in the conduct of a particular study (Griffin, 2000).

Qualitative research as its strength helps to ascertain details of human behaviour, emotion and personality characteristics. On the other hand, trends derived from qualitative analyses cannot be subjected to validation, therefore, they should be employed with care in a study as indicated by McClain & Madrigal (2012) and corroborated by Atieno (2009) saying, “there is no point in trying to establish validity in any external or objective sense”. Atieno (2009) further indicates that a qualitative research is the best approach to understanding a phenomenon because it is viewed in its context and allows the researcher to be involved in what is going on as supported by Mack, Woodsong, McQueen, Guest and Namey (2011).

Also, in the view of Reads & Profile (2016) the advantage of a qualitative method in an assessment and testing study such as this is that it elicits deeper insight into the phenomenon, behaviour, perceptions, feelings and understandings of the participants while on the other hand small sample sizes and limited time may be disadvantages of the qualitative method to such a study.

Qualitative research approach was adopted for this study to examine and describe in detail the education of autistic children in Numeracy and Literacy at NHSS. The qualitative research design assisted the researcher to investigate the characteristics of autistic children, general group norms, daily activities, instructional strategies and existing therapies; while providing insight into the challenges students and educators face in the teaching and learning of Numeracy and Literacy at NHSS.

The researcher also gathered evidence on the trend of development of autistic children on existing therapies for analysis. The researcher furthermore, proposed of Art Therapy based on the Naumburg theory, as an intervention for autistic child education to address challenges that emanated. The qualitative research method also assisted the researcher to describe the noticeable effects of the developed Art Therapy intervention on the education of children at NHSS during the study.

3.1.1 Research Methods

This study employed the quasi-experimental, document analysis, case study, descriptive and art based assessment. Leedy and Ormrod (2010) define a quasi-experiment to be “a study where participants are randomly assigned to groups that under-go various researcher imposed treatments or interviews followed by observations or measurements to assess the effectiveness of the treatment.

Aussems, Boomsma, and Snijders (2011) explain that in a quasi-experimental research, the researcher must be concerned with knowing the effect of an intervention on respondents investigated by comparing control and referent groups used for the assessment. The quasi-experimental research was used to randomly assign therapeutic designations to samples to help identify whether or not therapeutic designations made any difference on the general performance of participants using a control and sample group.

Document analysis included under the ethnographic methods of a qualitative research is an assessment method in which documents are interpreted by the researcher to give meaning to a topic while guided by rubrics to grade or score the document (Kawulich, 2005; Student Voice, 2010). The academic records of autistic children were studied before and after administering the therapeutic

designations to help determine whether or not any of the therapeutic designations had any influence on the performance of sampled children at the end of the study. This made it possible for the researcher to identify any improvements or otherwise in their behaviour and academic performance after the introduction of Art therapy in autistic child education at NHSS.

Methodologists agree there is no exact definition for a case or case study though some agree on the following definitions. Yin (1994) as cited in Merriam (1998:27) defines a case study to be “an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundary between the phenomenon and context are not clearly evident.” A case study involves exploratory and close investigation of an individual, group or phenomenon with a comprehensive descriptive analysis of a restricted number of events or situations and their relationships (Zainal 2007). Starman (2013) offers the definition of a case study to be a comprehensive description and analysis of an individual circumstance.

It is worth noting that, a case study has an advantage over other methods as it provides the opportunity to “examine in-depth a case with its real life context” (Yin, 2004), and validity (Greenhalgh & Taylor 1997). On the other hand, a case study poses difficulty in drawing cause-effect conclusions and results cannot be generalized. Again, Yin (2009) as cited by Spinks & Canhoto (2015) identified a strength of a case study to be its adaptability to varying research questions and settings, and the use of various sources of evidence allowing for triangulation. The case study approach helped the researcher make direct observations and gather data in the natural classroom setting of the autistic learners.

The descriptive research method examines the situation as it exists in its current state, and involves the identification of attributes of a particular phenomenon based on observations or exploration of the relationship between two or more phenomenon (Williams 2007). Descriptive research accurately depicts the characteristics of an individual, situation or groups by describing the variables of a study rather than testing and predicting relationships between variables (Anon 2001).

It is worth noting that a descriptive survey can be carried out for both qualitative and quantitative studies (Knupfer & McLellan 1996). Aggarwal (2008) as cited in Salaria (2012) holds that the descriptive research method is dedicated to gathering information about prevailing conditions and situations for the purpose of description, interpretation, analysis, and identification of trends and relationships of a phenomenon.

Also, the descriptive research method which is primarily concerned with finding out “what is?” according to Knupfer & McLellan (1996) assisted the researcher to describe and explain the characteristics of autistic children, the instructional strategies and existing therapies currently employed by educators at NHSS. The researcher asked questions such as “What instructional strategies do you adopt to teach autistic children in NHSS?” and gave detailed descriptions of observations and written reports of interviews conducted.

Art based assessments for informants was carried out by Arts Based Educational Research (ABER) which aims to suggest new ways to view education with the elements of art, and works towards a powerful transformation of feelings, thoughts, and images. ABER is also capable of persuading participants to use

education in new ways (Barone and Eisner, 1997). Sampled autistic children experienced group and individual Art Therapy sessions with a variety of art materials and techniques through which they were assessed and remedies administered. By this, the researcher determined and examined the effectiveness of art therapy as an intervention for educating autistic children in Numeracy and Literacy.

3.2 Population

In the view of (Yount, 2006), population in research consists of all the subjects that the researcher desires to study. The population for this study comprised all autistic children at NHSS and their educators. There were two classes – the junior and senior autism classes. Each class had nine pupils with one teacher. There was also one sensory teacher who managed the children in both autism classes during one-on-one and group sensory activities. Therefore, the population was $9 + 9 + 2 + 1 = 21$.

3.2.1 Target population

The target population is the “group of elements to which the researcher will want to make inference” as documented by Fricker (2012). The target population is the population of interest, which becomes the locus from which the accessible population may be sampled (Knight, Roosa, & Umaña-Taylor, 2009). The target population for the study were the junior and senior autistic classes of NHSS composed of twenty-one individuals. This comprised three teachers; one senior autistic class teacher, one junior autistic class teacher and one sensory coach for both classes. Eighteen autistic children; nine children in senior autistic class and

nine children in junior autistic class of NHSS in Accra formed part of the population.

3.2.2 Accessible population

An accessible population is determined by those who can be located and contacted to collect data from the target population of a study (Knight et al. 2009). The accessible population was maintained as twenty-one comprising three teachers and eighteen autistic children as guided by the Krejcie and Morgan (1970) table found in (Krejcie & Morgan, 1970) for determining the sample size of a known population – all population of this study were less than ten, therefore, sample size is equal to the population number. Nine children in senior autistic class of which four children formed the sample group and five children formed the control group part took in the study. Again, all nine children in junior autistic class participated, where five children were in the sample group and four children in the control group.

3.2.3 Sample and sampling

A sample is a fraction of a whole population selected to participate in a study and represent the total population for a study (Barreiro & Albandoz 2001). Therefore, sampled individuals are those from which data is collected. Salaria (2012) mentions that a sample is a group, derived from a larger group, adequate or sufficient in size from which data is collected to represent the larger population. Researchers go through sampling which Salaria (2012) describes as a process by which relatively smaller amounts of a population; individuals, objects or events is chosen and analyzed to find information about the larger group. Sampling is described by (Yount, 2006:2) to be “a process of selecting group of subjects for a

study in such a way that the individuals represent the larger group from which they were selected.” A researcher’s choice of sampling technique should be influenced by the objectives of the research or study (Palys 2008). For this study the researcher did not use a fraction of the population as all individuals in the population participated in the study. This was influenced by the small size of the population, therefore, there was no miniature group chosen to derive information representative of a larger group. Rather, data gathered represented the entire population of the study.

3.2.4 Sampling design

This study employed the purposive, cluster and simple random sampling techniques. Etikan, Musa & Alkassim (2016) hold the view that purposive sampling, also called judgmental sampling is a non-random technique that requires no underlying theories. This involves the identification and selection of individuals or group of individuals which are expert and knowledgeable with a phenomenon of interest. This means that the researcher makes a deliberate choice of a participant due to the qualities the participant possesses, what needs to be known and willingness to provide the information by virtue of knowledge and experience. The purposive sampling and nonprobability sampling technique, typically used for qualitative studies with the aim of achieving a depth of understanding allowed the researcher to include the entire population because they met the criteria of the study being conducted (Etikan et al. 2016). For the purpose of this study, NHSS was relevant and purposefully selected because it was a well-established special needs school in Ghana that had autistic children enrolled as pupils. New Horizon Special School admitted children between the

ages of 7 and 38 in the academic section; hence, age group of autistic children was available at participating school for this study.

According to Flinders University (2013) cluster sampling is a “sampling strategy where the population of interest is divided into representative groups of individuals among whom a random selection of subjects is drawn” (p. 2). A cluster sample is a simple random sample of a group of elements. Cluster sampling was suitable for this study as all autistic children and their teachers, made up of different populations were sampled for the study. As explained by Ahmed (2009) this study specifically employed the simple two-stage cluster sampling method in which the population was divided into groups by listing the elements or unit groups in the first stage and then randomly selected individuals were sampled in the second stage.

Simple random sampling is suitable when the population is relatively homogenous, as this provides unbiased and very accurate estimates. It is a method of sampling in which the entire population is divided into smaller units of population or a group of elements called strata, which are homogenous among them and yet represent the heterogeneity of the population (Barreiro & Albandoz 2001). In simple random sampling, the method allows all units of the population an equal and independent chance to be included in the study (Salaria 2012). Simple random sampling was used to select pupils from a homogenous population, where all members of the population had an equal chance of being selected. Pupils were selected for the application of the two therapeutic designations (Conventional therapies only and Conventional therapies with Art Therapy) for the art based assessments. Pupils in the Conventional therapies only

group served as a control and pupils in Conventional therapies with Art Therapy group formed the test sample.

Sampling design

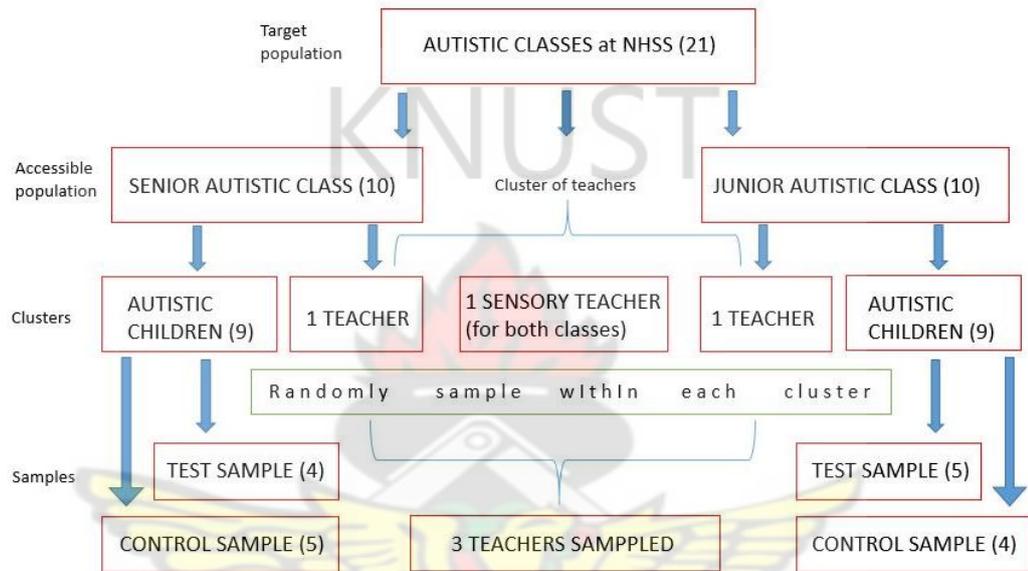


Plate 3.1: Sampling Design

Source: Field work, 2017.

3.3 Data Collection Instruments

Data collection instruments are tools for collecting data, and data collection procedures are the ways through which data were collected. A researcher's choice of research instruments can complement each other, and boost the validity and reliability of research findings (Zohrabi 2013). This study employed observation and interviews as data collection instruments as determined by the research methods used. The researcher used both participant and non-participant observation in this study. The researcher ensured that participants were aware of

intentions on the field during the study. The researcher maintained the natural setting and routine of the participants till the introduction and testing of the developed Art Therapy intervention began. Observations also helped the researcher to gain an understanding of the field to prepare an appropriate interview guide.

3.3.1 Observation as a tool for gathering data

Participant observation is the “process that enables the researcher to learn about the activities of the people under study in the natural setting through observing and participating in those activities” (Kawulich 2005:2). The researcher also learns about the perspectives held by the informants of the study. The participant observation research which is rooted in ethnographic research is when the researcher becomes a part of the group they are studying in order to collect data and gain a deep understanding into a social phenomenon or problem, during which the researcher plays two roles at the same time as an objective and subjective observer without allowing feelings and emotions to influence observations and findings (Crossman 2017). Participant observation allows for detailed description and access to the behind “the scenes culture” of the participants without scheduling events, while it may be a time consuming approach that raises controversy with findings because of the researcher’s individual understanding of what they observe (Kawulich 2005).

As a participant observer, the researcher took part in activities that formed the daily routines of the children and had direct experience while recording and documenting in the form of notes, photographs and video recordings. Activities in Literacy lessons included doodling, parts of the body, the alphabets of the English

Language, among others. Activities in Numeracy lessons include counting, sorting and puzzles among others. Sensory activities which included play dough, water play and sand play were observed by the researcher. This gave the researcher a first-hand experience with informants. The researcher paid particular attention to the behaviour of pupils through observations guided by an observation check list (See Appendix C).

“Non-participant observation involves observing participants without actively participating. This option is used to understand the phenomenon by entering the community or social system involved, while staying separate from the activities being observed” (Mills, Durepos & Weibe, 2010). It is a research technique in which the researcher watches the subjects of study with their knowledge, without taking part in activities under study or altering their natural environment ("Non-Participant Observation", 2016). "Non-Participant Observation" (2016), indicates that the main disadvantage with using this non-participant observation is that, there may be a change of behaviour in participants which may alter or invalidate the data obtained.

Among participants, there was a tendency for autistic children to react to the presence of an unfamiliar person, which in itself was considered a characteristic more than a conscious change in behaviour. Hence, the researcher's period of familiarization prior to the data collection by which time the autistic children were familiar with the researcher. This also allowed the researcher to identify and distinguish their varying behaviour in various situations. To curb the likely situation of teachers changing their behaviour with knowledge of being observed,

the researcher observed teachers and carried out participatory observation with autistic children concurrently.

In non-participant observation, the researcher observed the classroom environment and instructional strategies of the teachers during the Numeracy and Literacy lessons without participating in the delivery process of the educator. By employing both methods of observation, the researcher did not miss any details in the education of Numeracy and Literacy in NHSS that were required for this study.

Evans and Dubowski (2001) suggest that due to the varied levels of severity of characteristics in autistic individuals, there is not a fixed number of familiarization sessions one should have with autistic children. However, a minimum of four such familiarization session prior to therapy sessions is recommended.

In view of this, the researcher guided by the objectives of the study, autistic child behaviour and cognitive development theories, adapted and designed an observation checklist (Appendix C) from a hybrid of existing checklists (McGinnity, 2010 and Syndrome, 2014). To enable the researcher, get acquainted with the autistic children, their teachers and how they cope in and around the classroom, observations were carried out over a month in each of the autistic classes in NHSS.

According to Raja, Azzoni, & Frustaci (2011), the characteristics of autistic individuals and behaviour form a basis for diagnosis and assessment by a multi-disciplinary team comprising health and social work professionals. Hence, the researcher observed the empathizing and systemizing triad features of autistic

children in NHSS and AACT, as in the mind blindness theory to confirming their medical diagnosis prior to the study.

The checklist designed had 3 main categories comprising Empathizing behaviours, Systemizing behaviours, and the Development and challenging behaviours of autistic children. The above-mentioned categories had further subsections which had several detailed questions the researcher was expected to tick appropriately in the Likert scale to describe the severity of characteristics or behaviour being observed. Empathizing behaviours which were observed included the child's socialization (19 questions), communication (15 questions) and imagination of other's minds (2 questions); while Systemizing behaviours included repetitive behaviour (5 questions), islets of ability (9 questions), obsession with systems (4 questions), cognition (7 questions), sensory ability (12 questions and 19 sub questions); and Development and challenging behaviour (10 questions).

3.3.2 Interview as a tool for gathering data

Interviews provide a means for gathering data or information in which the interviewer asks questions for a response from the interviewee either face-to-face or over the telephone (Easwaramoorthy & Zarinpoush, 2006). Semi-structured interviews as defined by Easwaramoorthy & Zarinpoush (2006) were carried out as part of this study to interact with teachers face-to-face and generate their knowledge and perceptions on the education of autistic children. Interview guide with opened ended questions designed by the researcher covered the experience and expertise of teachers, the instructional strategies and therapies used in

teaching Numeracy and Literacy, their knowledge of autism and Art therapy as an intervention for educating autistic children (See Appendix B).

Semi-structured interviews with open-ended questions were preferred and designed by the researcher with a set of predetermined questions, and vetted by colleagues because it afforded the researcher the opportunity to prepare questions ahead of time, with a clear set of questions for the interviewer to follow to provide reliable, comparable data. (Cohen & Crabtree 2006). The interviewees were also able to express themselves freely during the interview, though controlled by the researcher in order not to lose focus of the interview. This allowed for clarification, and the researcher was able to elicit relevant data for the study. According to Easwaramoorthy et al. (2006) semi-structured interviews are “useful when there is the need to collect in-depth information in a systematic manner from a number of respondents or interviewees.”

A total of 6 semi-structured qualitative, face-to-face interviews were conducted for 3 teachers: 1 senior autism class teacher, 1 junior autism class teacher and 1 sensory integrated therapy coach for both classes. The interview was conducted for the teachers at two levels of the study. Specifically, before the development of Art Therapy intervention and after testing the Art Therapy intervention. All interviews were paper guided. The researcher asked open-ended questions from which further questions emerged as the discussion went on, giving better insight to issues on the ground. The interviews were recorded, as this gave the researcher concentration during the interview as opposed to jotting notes which may have caused distractions. After each interview, the researcher listened through and transcribed the data for analysis. Recorded interviews also served as an accurate,

permanent and readily accessible source of reference for the researcher during the study.

The interview guide that was designed prior to the study was divided into two parts with a total of 21 questions. Part one covered the experience and expertise of the educators and comprised 9 questions. Part two which covered the characteristics, behaviour and training of autistic children at NHSS included 12 questions. The issues of concern for which information was elicited during the interviews were the teacher's knowledge of autism on the spectrum of disorders, the characteristics children with autism exhibit in varying degrees and how it can be best controlled to maximize classroom management. Also, the experience and expertise of the teachers was of great interest to the researcher as this may influence their delivery of lessons to autistic children at NHSS. The interview conducted after the inclusion of the developed Art Therapy intervention was made up of 8 questions, aimed at ascertaining the teacher's perception of the developed Art Therapy intervention and its effect on the autistic children, if any.

3.4 Types of Data

Primary and secondary data were gathered for this study. Primary data included field records from observation of the characteristics and behaviour of autistic children, lessons taught in Numeracy and Literacy, the classroom environment, and interviews with the educators of autistic children at NHSS to ascertain their experience and expertise, and instructional strategies and therapies employed in the school. Secondary data was gathered from pupils' records, books, websites, journals, online documents, published theses, and other documents that were relevant to the study.

3.5 Data Collection Process

Upon request, the researcher was issued a letter of introduction from the Head of the Department of General Art Studies, College of Art and Built Environment, KNUST to the Principal of NHSS indicating the researcher's interest in autistic child education in Ghana, using NHSS as a case study. The letter was delivered by the researcher, was later contacted and accepted to carry out the study with autistic children at the mentioned school. Prior to the study, consent forms (See Appendix A) were issued to parents or guardians of autistic children at NHSS to seek their permission and behalf of that of their children or wards to be full participants of this study.

The researcher discussed observation schedule and research intentions with the Education Coordinator of the school, and proposed dates for commencement of observation and interviews. Dates were approved by the Principal and the researcher reported to school on the decided (specific day) to start observing the autistic children in school.

The study began with an observation of autistic children with the aim of getting familiar with them and having participatory experience in their teaching and learning processes. The researcher spent a period of four months from June 2016 to July 2016, and October 2016 to November 2016 observing junior and senior autistic children respectively of NHSS in their classroom environment. NHSS went on recess for the month of August 2016 and resumed in September 2016. The researcher had a total of 12 contact hours with the children in the junior autism class and 12 with children in the senior autism class per week.

Teachers were also informed of the intended interview to be conducted as part of the study, and permission sought from them. Subsequently, interview dates and times were scheduled for each teacher. However, the scheduled interviews were postponed on several occasions due to the tight schedule of teachers. The junior autism class teacher was interviewed on the 27th February, 2017, while the senior autism class teacher and sensory coach were interviewed on the 30th of February, 2017 at different times of the day.

Studies prove that it takes about 45 days for a material impact on the sensitivity of receptors to occur and the number of receptors that generally connect to behaviour to change and adapt to new behaviours (Roemmele, 2015). Hence, considering the developmental deficits and challenges of autistic children, this research was done over a minimum period of two terms of the academic year, in which each term was made up of approximately sixty days. The researcher had the objective of assisting autistic children to get used to the inclusion of Art Therapy in their routine over this period in order to assess response to the intervention of Art Therapy in autistic child education in Numeracy and Literacy at NHSS.

The research analyzed concepts that are found in existing literature on Art Therapy for autistic children. It also collected and analyzed field data. Recommendations in the form of theories that will guide teaching and learning autistic child education were derived from the study.

3.6 Activities Undertaken for Research Objective One

Objective one was to identify and describe the characteristics of the autistic children and the existing therapies employed in teaching Numeracy and Literacy at New Horizon Special School in Accra.

3.6.1 Observation of characteristics of autistic children

As mentioned earlier, the researcher designed a checklist composed of a hybrid of existing checklists (McGinnity, 2010 and Syndrome, 2014) with which autistic children of the NHSS were observed. The checklist was designed with a Likert scale (0 to 2); where “0” was Never, “1” was Sometimes and “2” was Always (Appendix C) where the researcher checked or ticked appropriately.

The researcher observed autistic learners in the senior class after which their counterparts in the junior class were observed. All learners were observed throughout the day over the observation period during activities in the classroom and outdoors at play. The researcher provided a checklist for each child and particularly observed each child over the period of a week. However, when the researcher noticed a “new” behaviour in a learner who was not being directly observed, it would be scored on his or her checklist.

The severity of the characteristics of the pupils from mild to mild-moderate to severe were determined by the frequency of the occurrence the behaviour in question. The observation Behaviour Checklist (Krug et al. 1980) designed by the researcher served as an Autism Diagnostic Observation Schedule (ADOS) (Lord et al. 2000). Severity was also determined based on language delay/Social Responsive Scale (SRS), and cognitive functioning/Intelligence Quotient (I.Q) (Constantino et al. 2003). If the learner showed higher frequencies in empathizing behaviour than systemising behaviour, he or she was described as exhibiting severe characteristics of autism. The autistic pupils of NHSS have varied severities because they functioned differently as observed by the researcher with the designed checklist.

3.6.2 Interview of Teachers on the characteristics of autistic children

As mentioned earlier, in Part III of the interviews conducted with teachers prior to the development of the Art Therapy intervention, teachers were interviewed on the characteristics that they have identified in the children they teach that make them autistic. The researcher had the aim of determining the teachers' knowledge of characteristics and behaviours of autistic children as that would enable teachers to be more tolerant of them in the classroom especially during Numeracy and Literacy lessons. It was also a means of validating the findings that had emanated from observations made.

The researcher conducted separate interview sessions for teachers with the help of an interview guide (Appendix C) designed by the researcher after permission was granted to go ahead with interviews. The researcher asked questions such as, "Is this child autistic?", "How do you know?" and other questions that ensued as discussions developed during interviews.

3.6.3 Observation of instructional strategies and existing therapies in Numeracy and Literacy Lessons

To elicit information concerning exactly how teachers at NHSS teach autistic children, the researcher observed a typical day in the school especially the delivery of lessons in Numeracy and Literacy, one-on-one sensory sessions with the sensory coach.

3.6.3.1 Observation of a typical day at NHSS

At NHSS teachers report by 8:00am to receive pupils as they arrive. On arrival at school, autistic children join the rest of the school for morning assembly and

morning devotion between 8:30 and 9:00 where they engage in religious activities such as praise and worship while enjoying music and dance. A teacher, not necessarily an autism teacher moderates the session. This teacher informs pupils of the date which is displayed on a card. For example, “Today is Monday, 12th December, 2016.” The children recite this as a group after which the moderating teacher nominates some children to repeat the date individually.

Assembly is dissolved at 9:00am and children go to their various classes for the next activity which is circle time from 9:00am to 9:45am. The researcher at this time joins the autism classes for circle time. At circle time, children sit in a circle with their teacher in the center of the classroom in the junior autism class and in a row in front of the class in the senior autism class. During this period children learn to socialize, are taught daily life skills and do simple exercises. The class teacher takes them through the date once again but, this time it is written on a white board; picture identification, singing of rhymes that teach life principles e.g. “the traffic light”.

In picture identification, the children are trained to identify their images and their names. The children have their names written on the whiteboard underneath Velcro strips stuck on the board. Their pictures are placed on the teacher’s table and children are instructed to go and pick their picture and stick it where their names are written. Of course, not all the children are able to identify their names at the first try. Some need to be assisted to do so correctly. For children who have mastered this skill of picture identification through repetition, when the familiar position of the images is changed they are found wanting.

The children have a snack break between 9:45am and 10:15am which is immediately followed by one activity from 10:15am to 11:00am, and a second activity from 11:30am to 12:15pm which includes art and sensory rotation on Monday and Friday respectively. Between 11:00am and 11:30am children participate in walking and stretching activities where they often go out to play. At 12:15pm lunch break begins and is immediately followed by a nap which ends at 1:30pm. Children wake up to attend an afternoon assembly for 30 minutes from 1:30pm to 2:00pm.

From 2:00pm to 3:00pm, autistic children are involved in various extra curricula activities. On Mondays and Fridays, they do sewing/weaving, Tuesday and Thursdays are designated for sensory rotations, and Wednesdays for traditional clubs which comprise music and dance club, beading club and art club.

For the pupils, the day ends at 3:00pm to allow for teachers to plan and prepare for the following day till 4:00pm. By 4:30pm, the classrooms are tidied up by teachers and they are dismissed.

3.6.3.2 Observation of Numeracy and Literacy Lessons

The researcher observed the instructional strategies and therapies employed by autism teachers in NHSS while observing the characteristics of autistic children.

The researcher observed the typical day of each child both in the classroom and outdoors from 9am to 3pm for four days in each week; paying particular attention to the academic session which comprised Numeracy and Literacy training from 10:15am to 11:00am and 11:30am to 12:15pm respectively. Throughout non-participant observation, the researcher participated in all activities and school programmes with educators, children and their nannies.

Before Numeracy and Literacy lessons begin, teachers would have changed or prompted pupils to change pictograms to correspond with desired activity and would have given a verbal prompt to the children to begin a new activity. Not all the children engage in the same activity because each child is on Individual Educational Plan. The teacher guided by targets for each child distributes various activities to children at their desks. For instance, in Numeracy lessons some children would be tracing numerals while others can write and are copying the numerals, and others counting numerals for addition. Children who cannot write may also be fixing a 6-piece-puzzle of numerals

When the children begin their activities, the teacher gives them no to little attention till they draw his/her attention by walking over from their desk towards the teacher expressing themselves in signs and gestures or screaming and throwing tantrums. More often than not, these expressions are difficult to interpret and may be considered as “misbehaviour” which causes the teacher to retort especially if they were not paying attention to the child. At this point, if the teacher is unable to control the child the sensory coach intervenes by taking him/her to the sensory room for therapy. This happens often in the senior autism class where all the children have good fine motor skills.

The situation is slightly different in the junior autism class where the children require extra attention in the form of prompts and reassurance, hence more attention for the children during activities though attention is minimal due to poor teacher to pupil ratio. It is worth noting that, in cases where the child is able to effectively communicate his/her need to the teacher, the teacher goes to the desk with the child to help him/her.

Learners objectives are set in the form of individual skill targets which are broken into simpler, achievable targets for the child. Teachers rely on the children's ability to imitate to get them to participate in activities, hence teachers initiate activities for learners to follow.

3.6.3.3 Observation of Sensory Integrated therapy activities

The researcher's observation of a typical day for autistic children in NHSS revealed that Sensory Integrated (SI) therapy is employed in NHSS for two reasons which include to develop their autistic children's fine motor skills and assist in the control of disruptive behaviour from the children. To develop the sensory processes and fine motor skills of the autistic children, class teachers have scheduled them to engage in SI therapy at least once a week.

The school has a sensory room where children are taken to participate in sensory activities. This room is bright and colourful, and has sensory devices such as the trampoline, therapy ball, play dough, salt, sand, flour, gari, pigment and stones for children to make use of to address their varying needs. Children are always supervised and assisted by the sensory coach who knows the preferred sensory material of the child. This knowledge is acquired through a sensory assessment that is performed for each child during his/her first days in school. The teacher gives the child's preferred sensory activity to him/her to use as a means of relief from sensory overloads and emotional stress.

3.6.4 Interview of Teachers on the effectiveness of instructional strategies and therapies used in Numeracy and Literacy Lessons taught

After an observation of the instructional strategies and therapies between June 2016 and November 2016, the researcher interviewed three teachers to elicit their opinions on instructional strategies and therapies currently used in teaching Numeracy and Literacy and their effectiveness over the years for children. The researcher asked questions such as “What instructional strategies do you use autistic children in NHSS?” and “What therapies do you employ in teaching Numeracy and Literacy?” Kindly refer to part to of the interview guide for teachers (Appendix B) for further details.

3.7 Activities Undertaken for Research Objective Two

Objective two was to design and propose art therapy as an intervention for educating autistic children Literacy and Numeracy at New Horizon Special School in Accra.

3.7.1 Observation of educational and classroom environment

Studies indicate that autistic children have artistic and visual prowess as a strength that facilitates their communication (Moffitt, 2011). For this reason, the researcher was concerned about how these strengths are harnessed in the classroom environment to control the behaviour of autistic children during lessons. The researcher’s focus was to observe the effect of the visual impressions on the walls of the classroom, the functionality and spatial arrangement of classroom furniture, and the quality of lighting and ventilation in the classroom at all times during the day on the behaviour of children. The following data that emanated from this

observation assisted the researcher in the development of the Art Therapy intervention.

3.7.2 Document analysis

Pupils' academic records were retrieved and analysed to determine progress of each child and to assist the researcher in establishing any improvements in behaviour or development in all forms after the introduction of art therapy in routines. In addition, document analysis assisted the researcher to ascertain how helpful existing therapies had been for autistic pupils in Numeracy and Literacy education in NHSS. School records reviewed included 2011/2012 academic year to 2015/2016 academic year as children had been learners at NHSS for varying number of years.

Pupils' academic records available for analysis were in the form of IEP and MDT for each child. MDT assist the teachers to develop an IEP report for each child. Invariably, an IEP is a reflection of the pupils MDT performance or output. Hence, the researcher analysed each pupils' IEP for the purpose of this study. These were evident in the achievement or otherwise in autistic children of NHSS based on annual IEP and termly MDT goals for autistic children. The researcher observed the trend of skill and strategy acquisition of each child in academic skills such as pre-math, pre-reading and pre-writing which form the curriculum for Numeracy and Literacy lessons for autistic pupils at NHSS.

3.8 Activities Undertaken for Research Objective Three

Objective three was to pre-test and evaluate the effectiveness of the developed art therapy intervention in teaching Literacy and Numeracy at New Horizon Special

School in Accra. Art therapy as assessment and remedy was based on the Naumburg Theory.

3.8.1 Art therapy as an intervention for teaching Numeracy and Literacy in NHSS and its effectiveness

It was mandatory for all second-year MPhil Art Education students at the Department of General Art Studies, KNUST to go through at least 12 weeks of teaching practice in the first semester as part of the programme. Students have the liberty to choose where to teach within Ghana, and the researcher chose to teach at NHSS to gain experience in teaching autistic children. For this reason, a second letter of introduction was delivered to the school by the researcher from the department.

During the period of teaching practice from October to December, 2016, the researcher assisted teachers in both autism classes to deliver instructions to the pupils. The researcher particularly prepared and taught a lesson on Days of the week in Literacy and a lesson on Currencies in Numeracy for the senior autism class. While Numbers and Colours were taught in Numeracy and Literacy respectively in the junior autism class. Altogether, these gave the researcher a hands-on teaching experience of teaching autistic children and an experience of the challenges that educators encounter with the behaviour and intellectual deficits of autistic children.

Children between the ages of 7 and 38 participated in the study. Children in the junior autism class were between 7 and 15 years old, while pupils in the senior autism class were between 16 and 38 years old. Each class has an educator, and a teacher who takes the children through one-on-one and group sensory activities. A

control group and sample group at each level were selected with two therapeutic designations. These therapeutic designations included Conventional Therapy only, and partly Art Therapy and Conventional Therapy.

All pupils in autistic classes and their teachers participated in the study. One-on-one and group art therapy sessions were goal oriented for each pupil, and the group guided by a weekly time table developed by the researcher. Also, one-on-one and group Art Therapy sessions were done with autistic children as a means to assess their intellectual and behavioural challenges and propose art therapy as a remedy to these encounters.

Individual development goals were determined by and designed to support already existing termly goals set by the teachers for each child. Group goals were targeted at addressing social behaviours of autistic children at NHSS. One-on-one art therapy activities included “manipulate play dough”, “my self-image”, “draw your family”, “draw your emotion”, “paint your body”, “my day”, “my home”, and “what is next?”

Group activities always started with warm up songs. Art therapy sessions comprised sessions with directives such as “paint with your eyes closed” and “cut and paste”, “make your face mask”. The researcher observed and recorded the reactions and behaviours, and trends of children during the sessions for development of the model. These art therapy sessions were scheduled to take place after siesta from 2:00pm to 3:30pm on each school day. Each pupil had a 30-minute session in the week between Monday and Thursday, and a group session on Friday. Also, when children exhibited disruptive behaviour during lessons, they would take a break to do art.

Art materials that were used in these sessions included both liquid and dry medium. Liquid medium comprised of water based paints and washable coloured pencils. Materials included bond paper, eggshell paper, sheinder wire, cotton balls, shredded paper. Tools used were crayons, pencils, coloured pencils, markers, paint brushes.

When the period of teaching practice was over, the researcher continued to introduce Art Therapy as a remedy to disruptive behaviour, as a system of communication and social interactions with the children. The researcher used art as a vehicle to determine the emotions of autistic children, and then art therapy was used to resolve the communicated need of the pupil(s) when disruptive behaviours were exhibited during Numeracy and Literacy lessons.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Presentation and discussion of findings for research objective one

Objective one was to identify and describe the characteristics of the autistic children and the existing therapies employed in teaching Numeracy and Literacy at New Horizon Special School in Accra.

4.2.1 Characteristics of the autistic children, and instructional strategies and existing therapies at NHSS

The researcher discusses below the strengths and weaknesses of the characteristics of autistic children, the instructional strategies and existing therapies at NHSS and

how they can be harnessed for effective teaching and learning. The researcher also considered how helpful these are in satisfying the curriculum in Numeracy and Literacy.

4.2.1.1 Characteristics of autistic children at NHSS

A general observation of the teaching and learning environment in NHSS is documented below:

1. It was observed that autistic children rely on a routine.
2. Teaching is individualized and goal oriented to meet the developmental needs of each child.
3. The autism schools collaborate with parents or guardian of autistic children to supervise their child's development
4. The coach to child ratio is approximately 1:5
5. Occupational Therapy as noted by Autism Speaks (2014) is also employed as an intervention for the education of autistic children in NHSS and AACT
6. Autistic children are assisted through Sensory Integrated Therapy in a sensory room or outdoor play area when they get of hyperactive (Autism Speaks 2014)
7. Autistic children are trained in Daily Life Skills from infancy
8. Visual/artistic impressions on the interior walls of the classroom employ artistic ability and visual skills of children
9. Not all autistic children exhibit the same characteristics in the same degree
10. All autistic children observed showed significant cognitive developmental delays through their art – scribbling and pre-schematic, and operate between the sensorimotor stage and the preoperational stage of Piaget's theory of cognitive development

11. They have distinct social setbacks that affect their development
12. Autistic children learn or acquire knowledge through concepts and by memorizing and scripting
13. Each child has learned his/her daily life skills

4.2.1.2 Characteristics of senior autistic class pupils

In the senior autistic class, pupils were randomly selected to form test and control groups. Four pupils formed the test sample and received Conventional therapy and Art Therapy, while five pupils in the control group received Conventional therapy only.

Pupils in the test group

1. Aidy

When I arrived in the autism class for the first time, I was welcomed by Aidy, a 16-year-old teenager with an awkward stare. Obviously, I was a source of distraction as she tried to keep focused on her math of addition assignment. Aidy who was previously counting numbered wooden blocks to aid in her sums, lifted up her head abruptly when she heard the classroom door open.

Coach Emmanuel introduced me to the class as a friend and researcher who will be assisting them for a month. I warmly said, “hi” and mentioned my name to the children with a broad smile and Aidy keeps staring at me, muttering a few words I did not quite hear and Coach Emmanuel says, “Aidy, it is ok. Continue with your

work.” I suppose she expressed dissatisfaction with the disruption that came with my arrival.

Aidy is typically hyper verbal/loud and hyper active which is the reason Coach Emmanuel and Bernice regularly shout, “Aidy, behave.” Not to my surprise in the least, Aidy will always repeat, “Aidy, behave.” In her case, she shouts “Aidy, behave” for no apparent reason and out of context. Though Aidy exhibits delays in cognitive development through her scribbled art, she shows strengths in memorizing and categorizing information. The results of her memorizing is evident when she recalls facts she has been taught repeatedly.

I observed that Aidy is highly dependent on routines and gets agitated when her routine is interrupted. She also has learned and mastered her routine and knows her sequence of activities for each day. She is relatively independent and is able to correctly change her schedule cards at the appropriate time for each activity. Aidy has great difficulty adhering to rules and regulations in the classroom, sensory room, computer laboratory and at play.

She has a long-term memory for facts and events. Six weeks after I completed my month of familiarization at NHSS, I visited the autism class and I received a warm welcome from Aidy. It was worth noting that after two weeks of being in school with Aidy, she will consistently forcefully help me place my handbag in the exact position at the teacher’s desk, she had seen me keep it. Aidy became aggressive anytime I tried to resist her offer to take my handbag to the table.

When at play and during shared activities, Aidy is very selfish and becomes abusive and aggressive when things are not done the way she prefers. At play Adowa dominates the sand table and will overreact when another child has to join

her to play. She loves to be on the swing and will not welcome help from any adult if she is struggling to get onto the swing. Aidy is often active and prefers to do things for herself while she has a sense of responsibility toward others, which gives her a relative sense of independence.

Aidy smells, tastes and sometimes tries to eat inedible objects like her pencils and erasers. She has no preferences or aversions for food. She is diligent at home economics and daily life skills and enjoys activities in those. She is able to write her full name correctly without assistance, and answers basic questions about herself sometimes with reassurance. For example, what is your name? How old are you? Where do you go to school? Where do you live? What is your mother's name?

2. Jack

Jack has relatively significant speech and language deficits which make him rely on non-verbal language and gestures to communicate. He is unable to hold conversations with people and usually withdrawn and sometimes talk to himself. Jack also overreacts to external stimuli, particularly in change in illumination, and sensory overload. It was interesting to hear Jack repeatedly mutter, "it is dark, I can't see" as best as he could when there was power cut one rainy morning in school. Jack also seems to have some fear or aversion for darkness, and will draw near a source of light or window when the classroom is dark.

Jack is verbally repetitive, relies on daily routines for daily life skills and he has difficulty adjusting to a change in routine. He also requires excessive reassurance and prompting at new tasks. When at a familiar or preferred task, he expresses dissatisfaction with interruptions. Jack often reacts to noise from other sources,

especially when he is sleeping. He also gets upset by typically getting aggressive and abusive when King, his classmate calls him or repeats his name. He will shout, “Teacher Emma, King is calling me. Kin do not call my name” as he approaches King in his bid to assault him.

Jack has creative and visual prowess, with strengths in sums and counting. One morning when I arrived in the autistic class, Jack was cold to me. Try as I could to engage him in a conversation, he was unresponsive and failed to communicate both verbally and non-verbally. During the threading and beading period, Jack made a beautiful necklace for me that matched the colors in my attire. It may be inferred that, Jack was observing my attire to make the necklace for me while I was trying to communicate with him. Due to his inability to operate his senses simultaneously, he could not respond to my questions that morning. He also exhibits poor combination of sensory inputs – he hardly makes eye contact while listening to someone.

It is worth noting that Jack has a sense for detail as well. We learn from Jack’s scribbled art that he is cognitively under developed. He often selects warm and dark colors for his art work.

At play Jack habitually sits on a particular swing even when he is not ready to play. He reluctantly engages in other activities at play with the direction of his coach. Jack is 32 years old and easily gets exasperated at the slightest stimulation.

3. D-D

Teenage D-D is hyper active, particularly after lunch for no apparent reason. He will often scream and throw tantrums – covering his ears or throwing his arms up in the air and jumping simultaneously to get attention during rest hour, and this

behaviour disturbed the other children in the class. When D-D begins to react after lunch, Coach Emmanuel out of frustration will either spank him or force him to sleep. This to a large extent did not solve the problem or address his need. He will sometimes point to his penis and say, “peepee” after tantrums subside.

In my bid to help D-D cope with his environment, I gave him a new jig-saw puzzle to fix. During this familiarization session, I noted a few remarkable things about D-D – he appreciates and enjoys art. He logically fixed the puzzle from bottom, left to right, in rows till the picture puzzle was complete. D-D did not fix the puzzle by trial and error. He will critically look through the jig-saw pieces and find the correct adjoining piece continue the puzzle, which was intriguing for me. Most typically developed children will fix the puzzle by trial and error – where they try to fit a piece in the puzzle and if it fits, they fix it in or pick the next closest piece.

In another such scenario, I spent time with D-D in the sensory room, where I gave him a bowl of assorted white and brown exotic beans to sort. To my surprise, D-D sorted the beans in five different types when I thought there were three different types. Apparently, the brown beans had different colored eyes and corrugations that distinguished them while one white bean had a black eye and the other did not. I was amazed at his heightened sense for detail. Observing D-D in the sorting process, he will rub the beans together in his palms, toss, smell, taste and attempt biting into the beans.

He related to me, “a stranger”, just like he relates to his peers and instructors and everyone else. Like most autistic children, he has delayed speech and relies on gestures to communication. D-D exhibited his skill in math and logic when he

arranged orange colored beads in a triangle- 10 beads on each side if the triangle as he counted “1” to “10” from the apex of the triangle to the base of the triangle. It was observed that D-D learns better with one-on-one tutoring.

4. KayCee

KayCee has absolutely no speech, smiles at others when he catches a gaze or has eye contact with them and immediately looks away. KayCee typically shies away from his peers and is attracted to adults. He relies absolutely on signs and gestures to communicate by softly touching adult person to draw attention to his need.

KayCee is dependent on routines and lacks initiative both in class and at play. He requires excessive reassurance at tasks and activities especially when they are out of routine. KayCee is 16 years old and has his daily life skills on hand. He has no difficulty obeying rules and regulations in the classroom, computer room, sensory room and at play.

KayCee enjoys music, will usually express delight with songs that are sang at morning assemblies and music time by a sustained broad smile. It is worth noting that KayCee repeatedly hums the tunes of familiar songs softly at regular intervals during the day.

KayCee is obsessed with computer gadgets and electronics, explores and pays close attention to such objects and is fascinated by them.

Pupils in the control group

1. Amy

Amy “beautiful” has mood swings often that make her emotional and giggle or cry for no apparent reason, preferring to be alone and withdrawn from people. She

has no language and speech, relying on gestures and signs to communicate. When at a task, she is easily distracted by auditory and visual stimuli.

It is worth noting that Amy is very sensitive to her environment, uses her peripheral view often and overreacts when someone is approaching her from behind. Amy hardly socializes and will not engage in activities such as games and sports with peers. She has a habit of hiding objects or misplacing them, and when they are most needed they are nowhere to be found. Amy repetitively hits her chest hard with her hand when she is up to some mischief.

Amy has food aversions and preferences. She enjoys eating rice dishes or yam and “nkontomire stew” (a Ghanaian sauce made from cocoyam leaves). Amy habitually removes her shoes whenever she sits and is over responsive or sensitive to touch, pain and temperature. She is sensitive to details and has tendencies to be destructive – she tears jig saw puzzles into tiny pieces that can hardly be put together again and breaks crayons during art activities, hardly producing any art. She is typically dependent on routines and is guided by rules and regulations in the classroom. She spends a lot of time at tasks such as eating.

2. King

King has relatively is extremely hyperactive – he uses an extremely unmodulated loud voice both indoors and outdoors, is verbally and physically abusive to himself and others, engages in lengthy monologues without noticing people listening, is very aggressive and destructive, is selfish and impulsive, causes pain to his body, has no sense of danger, consistently repeats words and phrases he has learned. He is under responsive to pain.

On the flip side, King has little speech and language though not as clear as a typically developed child – he speaks English, “Twi” and “Ga” (both Ghanaian local dialects). Though Kin initiates conversations, he does not consider that his conversation partner should take a turn in the conversation, so does not stop to listen.

King is unimaginative, neither takes initiative in class to do things or obeys rules and regulations. King in an art session or activity is rarely productive, and when he draws anything it is schematic. Often, he will destroy the art materials – jumbo crayons and paper. He has great difficulty learning and exhibits no advanced skills or abilities.

3. Pancy

The “Smiling Princess”, as I lovingly call her is often hearty and joyful. Unfortunately, Pancy is withdrawn and often on her own. She hardly engages in any activity until prompted to do so. The first thing one will notice about Pancy apart from her never fading smile is her reliance on gestures to get things done due to her speech deficit – she will tap you to draw your attention and expect that you identify her need and respond accordingly. Pancy has strong need for soft touches and hugs. Therefore, she will touch me at any available opportunity and hold on to me if she fails to get my full attention.

Pancy is a 13-year-old daughter of two autistic children of her parents. Like her younger brother, she has poor eye contact and has an unusual grip on objects. Pancy has fears for gravity, spinning and bumping into things, so she refuses to be on the swing or on the trampoline at play. She rather engages in activities that do

not require active movement like playing with sand alone. She does not interact with her peers in the classroom and at play.

It takes Pancy a while to acknowledge relevant cues while fixing puzzles and process information, especially in symbols. When Pancy is idle, she will usually engage in a monologue or hum to herself despite who is watching or listening. Pancy exhibit strengths in art – threading and beading, design and color work. She has a keen sense for detail.

4. Nana-G

Nana-G, not too different from other autistic children has no speech and language, and makes absolutely no effort to do anything in class, at play, in the computer laboratory and even when he is prompted to. When he does, he requires excessive reassurance. He seems to be unresponsive to stimuli and has challenges learning and communicating. He has poor eye contact and gets fascinated when he is given special attention non-verbally, without interpreting and responding to non-verbal communication.

Nana-G, the 16-year-old was observed to recurrently have his left hand on the flap on his trousers when he sits, with his torso slightly bent forward and his right hand in a vertical endless motion from head cheek to waist. He gets excited when it is time to eat and he does so with such speed, one would wonder why such enthusiasm is not evident in other activities. Nana-G resists all efforts to get him to engage in any sensory activity.

5. Kob

Kob is a 32-year-old autistic man lacking initiative to do anything, he “chews” his fingers causing numbness and sores to them. He is not assigned any tasks either because it is difficult to get him to do anything including eating or feeding himself, or when he eventually does he is extremely slow at completing the task.

Socially, Kob has a sense of humour and giggles for no obvious reason while he engages in monologues. Outside the classroom, he will not play but will make fun of other children as they play. He resists all efforts to get him to engage in any sensory activity. He holds objects in an odd manner and applies excess pressure to art materials that destroy them. In art sessions or activities, Kob is hardly productive. He will consistently knock the tip of the crayon on the paper in the same spot, and gets fascinated by the noise it creates.

With little language, Kob calls me “Aunty nurse” in my first encounter with him and spits on me, like he does to everybody else. Upon enquiry, I learned that Kob called me “Aunty nurse” because I was in a white blouse which he related to a lady occupational therapist who visited the school once in a white lab coat, whom he called “Aunty nurse”. Long term memory for facts and events, I noted!

4.2.1.3 Characteristics of junior autistic class pupils

Likewise, the researcher randomly selected pupils in the senior autistic class to form test and control groups. Five pupils formed the test sample and received Conventional therapy and Art Therapy, while four pupils in the control group received Conventional therapy only.

Pupils in the test group

1. Leo

Lee-O, we will all call him is a 7-year-old hyperactive autistic child who is very sociable and enjoys group activities. Though without speech, Leo communicates his needs through sounds and gestures. For instance, when he wants to use the washroom he will make sounds such as “mm-mmm-mm” while pointing at the flap of his shorts. In response, his teacher will help him to the washroom. I observed that he sometimes has a strange facial expression which cannot be linked to any particular apparent need. Leo is very responsive as long as he understands what you are communicating.

He is obedient and accepts corrections from his teacher but just in the moment. It is obvious that he can hardly sit in one place and is often on his feet; standing, jumping, running and somersaulting repeatedly. This often gets Leo’s teacher exasperated, coupled with the fact that he hardly gets tasks completed as he is also easily distracted by stimuli.

Leo enjoys activities such as sorting, lego fixing, doodling, water play, and outdoor play. This is evident in his gestures and facial expressions in the form of smiles while he does. He does not get tired of activities he enjoys, will prefer to engage in them at his leisure times and has maximum concentration at such times. He would throw tantrums when he is required to stop these activities. Unfortunately, he is very selfish in his play and gets aggressive when his colleagues make attempts to play with him, sometimes resulting in a squabble as his colleague may retaliate. He will sometimes go ahead to gather the elements of the activity e.g. lego to himself.

2. My Friend

On every stranger's first visit to the Daffodil class of NHSS, you would be met by at the door by a warm hearted 9-year-old girl who would say, "My fri-eeeeee-nd!" while attempting to embrace you or giving you a peculiar gaze as long as she is in school on your day of visit. When she does this, you would open up to her immediately and would likely respond by calling her friend as well. That is simply how she gets her nickname, My Friend. Her friendliness reflects at play, she enjoys group activities and competes in games and sports.

From there, she can't help but keep the conversation going simply because her sociable, out-going self will not allow her to. Though you may not understand what she says because you cannot hear her words or language clearly, you are still likely to respond to her like you would with a baby learning to talk – just be sure not forget the purpose for your visit. She is hypervocal!

My Friend, and she really is, has speech but delayed language. She learns and habitually repeats words that she hears in her environment. When she speaks, she non-logically uses learned words spontaneously without understanding either to a listener or to herself. She often uses a loud unmodulated voice and can be heard from the ends of the school's academic block. She is able to correctly respond to questions about herself such as her name, her mother's name, her place of abode, her sister's name and her driver's name. It is worth noting that she has learned her teacher's names and calls them in time of need.

Clearly, she takes initiative especially in self-play or role play by symbolically using legos to build houses or make cakes, and counts pieces of card to represent money in trade as though she is in the market. She requires less prompts but excessive reassurance during activities. She has an awfully short attention span, is very impatient, easily gets distracted by stimuli and hardly completes a task

without supervision because she is hardly focused on what she does and is often in a hurry to do something else. Interestingly, she has the opposite behaviour to activities that interest her such as picture reading. When she is picture reading, she is composed, keeps her environs as tidy as possible and relates images to familiar real life objects. For instance, every fair lady she sees in a magazine is her sister, “Mimi”. She is creative and imaginative in her play.

Unfortunately, My Friend has no sense of danger and exhibits aggressive behaviours to express displeasure in any situation. She would throw tantrums, scream, inflict pain and wounds on herself by biting and banging her head against a door till she is comforted or relieved. In extreme cases, she gets defiant and would use offensive language she has learned from her environment.

3. Sherry

Sherry, an autism with downs syndrome girl, and 16 years of age would pass for the class prefect in Daffodil! She is what I would like to describe as high-functioning though like other autistic children, she exhibits developmental deficits socially and cognitively.

If for any reason, the class teacher needed to step out of the class Sherry would take responsibility of the class whether or not there is a nanny or a volunteer to take charge. She would discipline the other children where necessary and will make an attempt to report any misbehaviour to the class teacher when she returns. Unfortunately, like other children affected by autism Sherry has delayed speech and language and sometimes relies on signs and gestures such as nodding and pointing, and facial expressions to communicate.

She is able to follow simple instructions from the teacher. This makes it easy for Sewaa to run errands on behalf of her teacher and others in the school which gives her a sense of responsibility and increases her self-esteem. Sherry does not like to be confronted, reprimanded or talked to harshly so she is careful to carry out activities diligently. Whenever, she went wrong with any activity and was corrected she got moody and would be uncooperative for the rest of the day.

Sherry enjoys group activities and encourages her colleagues to work along with her by giving them prompts through signs and gestures. She exhibits repetitive behaviours, such as repeating words and imitating others. She takes time to make new friends but mixes well with peers both in the classroom and at play. Sherry is good at her daily living skills specifically bathing, washing crockery, brushing of teeth, using the washroom and combining her hair though she needs oversight in order not to waste resources like soap and water. At any activity, Sherry needs excessive reassurance to carry out her tasks, though she would take initiative. She also does a good job at following her pictograms.

4. Jeromy boy

The notable feature of Jeromy is his withdrawn solitary nature. Jeromy has no speech nor language but every now and then you would hear him hum a song and mutter a few words to himself as though in a monologue. Jeromy is not sociable – he hardly mixes with his peers either in the classroom or at play even when he is forced to, he has difficulty with initiation and interacting with others, he does not enjoy shared activities. He often has a weird gaze and uses his peripheral view

when he detects any form of interference from both familiar and unfamiliar people.

Jeromy has his share of skill set as an autistic child with down syndrome. He is not easily distracted by stimuli, he learns faster than other children in his class, he needs little supervision at his tasks and activities, he is engrossed in activities he enjoys like art. During art sessions, he would look closely at art materials attempting to taste and smell them before he begins the art process. He keeps a smile and will laugh intermittently as he does an artwork.

Jeromy has no problem following instructions given by his teacher. He has a strong sense for detail with good hand-eye coordination and sensorimotor skills. He can fix 6 piece puzzles, he has a firm grip on objects, he can fix legos, he is able to fix both small and large pegs into holes.

Interestingly, in spite of the fact that he is not sociable he enjoys group activities such as storytelling. He shows this by listening attentively to his teacher as she tells the story. He also enjoys picture reading but, always has a quarrel with My Friend when he tears out p.s that have pictures they both enjoy. He keeps these pictures for himself – Jeromy has tendencies to be selfish. He also has a habit of shredding paper to bits.

5. Griffy

Griffy boy, as he is called in school is a cute handsome 7-year-old autistic boy who is characterized by repeated screaming, winking of both eyes and sometimes crying to draw attention to himself especially when he feels lonely. He often just desires and enjoys the presence of a familiar person.

He lacks speech and language, therefore, relies on signs and gestures to communicate his needs to his teacher. He often screams in an unmodulated voice while pointing to items he needs that are out of his reach in a bid to ask for assistance to access them. Griffy constantly has an indifferent facial expression. Griffy responds to his name by turning his head in the direction where he hears his name coming from. He can understand simple instructions like “go”, “come”, “stop”, “sit”, “eat”, “do it” but not complex instructions.

Griffy has great interest in objects but is destructive when he comes in contact with them. He would hit them on the table so hard till it breaks and gets destroyed in some other way, failing to understand that he shares that toy with his colleagues in school. When anybody wants to play with him, he exhibits selfish interactions by hiding the object in his possession. Griffy is unimaginative in his play and has no sense of creativity in his activities.

Griffy gets glued to activities he enjoys and does not mind being at it the whole day – such activities include outdoor play. It is very difficult to get him to do any activity that is not in his interest. He would often show reluctance by not attempting to do the tasks, and when his teacher insists he would rebel with tantrums. Griffy was observed to consistently remove his shoes whenever he sat at his desk.

Pupils in the control group

1. Macey

Seventeen-year-old Macey is withdrawn and solitary till she gets outdoors to the playground. She does not enjoy the company of others and avoids all forms of interactions with anybody apart from her mother. She knows the sound of her mother's car engine and horn and immediately picks up her school bag when she senses the presence of her mother in school.

She seems to be nervous around people as she constantly has her head down with the back of her hands covering her eyes almost always. This was not different even when she was walking which made her bump into other children and objects. Interestingly, she had no accidents because she is extremely sensitive to her environment.

Sneak peeps on her during observation when she was alone at the assembly hall of the school showed her hands on her laps, her head up, eyes wide open and she looking around at her environment with a grin. It was observed that while walking to the playground, Macey would avoid grass and preferred to use the bare patches on the ground.

When her name is mentioned she makes no attempt to respond. She knows her routine and has an incredible sense of timing. She is aware of her meal times, play times and closing times, and responds positively when time it is time to these activities. Macey lacks speech and language, and does not make use of signs and gestures to communicate her needs and concerns. She also is sensitive to stimuli and reacts promptly to foreign sounds like the footsteps of persons, passing aircrafts, slamming doors and windows by covering her ears.

Macey enjoys outdoor activities better than indoor activities. She will not make an effort to do anything at all in class and it is near impossible to persuade her to do

anything apart from swing at the playground. She enjoys swinging and when she is at it she takes her hands off her eyes, laughs, holds the ropes on the swing and draws her teacher's attention to push her to swing. Her facial expression is full of joy and excitement at play times.

Macey does not like to be touched. She would scream in awkward sounds and tones when her teacher attempts using hand-over-hand techniques to help her at activities such as doodling and ring setting. When her teacher is insistent, she would become so stiff in her limbs such that her hand cannot be moved to scribble for instance. Macey will not take initiative to do anything and does not respond to prompts and guidance from her teacher.

2. Superman

Hearty-go 8-year-old Superman maintains a content facial expression as often as he can. Like some of the other autistic children, he lacks speech and language and makes sounds to assist him communicate his needs to his teacher but has the ability to interact with his teacher with body gestures. He often points to items, example, a cup and floor mat to show he is thirsty and sleepy respectively. His teacher responds by giving him water to drink to satisfy his thirst and the mat to lie on to rest.

Superman is a hyperactive little boy, who hardly sits and is sometimes literally fastened in his chair to keep him at his desk. Even then, he rocks in his chair repeatedly. He likes to hop and jump at one spot, chewing his clothes and hands getting them soaked in saliva which leaves him smelly by the close of day. It is worth crediting Superman with his good social interaction skills especially in shared games and sports he enjoys. He has short attention spans and requires a lot

of simple verbal prompts and excessive reassurance at activities in class. He hardly completes a task on his own.

Superman learns fast through concepts but has difficulty identifying relevant cues from his teacher. For instance, when his teacher says, “Superman, sit” while pointing to his colleague who is seated, he would understand and sit. When he is standing and his teacher pulls his chair towards him he does not consider it as a prompt to sit, so he doesn’t. Rather, he will acknowledge that the chair has been brought to him and turn to smile at his teacher. After repeatedly providing his chair as a prompt to let him sit, he gains a long-term memory of the concept of the purpose of a chair which is to sit. Therefore, later when his chair is brought to him while he is standing he would sit.

3. Flicker

When you have an extremely sensitive and emotional or moody autistic child who has a narrow range of interests, it is challenging to marry the variety of characteristics in a classroom setting for effective teaching and learning. This is 10-year-old Flicker.

In Flicker’s case, it is very easy for his teacher to find herself ignoring him, but that would only compound his social deficits – he will prefer to play alone than participate in any group activities; he makes no effort to interact with his peers but finds solace in adults around him. In the midst of older people, he tries to initiate interactions by repeatedly touching your arm, neck and face. Sometimes, he would adjust your clothes where they are misaligned or looking odd to him – that is his strong sense of detail exhibited.

He is very orderly and observant, and often puts things right. By this, he exhibits his long-term memory for facts and events. It was noted that he would not dare go close to sites where he had had bad experiences. For instance, one day he slipped and fell while walking in the corridor. After that day, he will make all efforts to avoid the corridor to use another entrance to avoid walking through the spot where he fell. If for any reason, he had to use the corridor he would walk along the wall.

Flicker has poor eye contact, rubs his eyes a lot and sometimes has them closed. He does not like to be touched but always touches people and objects in an awkward manner. He is repetitive and unimaginative in his play. When Flicker is moody, he would cover his eyes with his hands and ignore everybody including friends he has struggled to make. At this time, he shuns his friends' company and is withdrawn thereby losing his friends much faster than he made them.

4. Chuck

Sociable Chuck enjoys the presence of people and welcomes interactions from them as he communicates through good eye contact and a broad smile whether you are a stranger or familiar person. Chuck has a great sense of detail and enjoys activities such as play dough, sorting and putting pegs in holes. He does them diligently and with maximum concentration, not easily distracted by stimuli in his environment. He abhors external noises but is very comfortable with noises that he generates. For example, when Griffy is banging his toys on his desk and screaming, Chuck becomes defensive and gives a stern look at Griffy. When he does same, he is just fine.

Chuck uses a wheel chair because he also suffers from cerebral palsy. This clearly limits his physical and daily life activities such as exercising, self-feeding and using the washroom but he engages in physiotherapy in school to keep his

muscles active. Like other autistic children, he has delayed speech and language, and also relies on gestures and signs for communicate. He is able to understand and respond correctly to simple instruction from his teacher such as “eat”, “stop”, “drink” and “wait”. He has difficulty processing complex instructions and symbolic information, which makes it difficult for him to read pictograms.

He requires prompts and reassurance at activities, he does not take initiative on his own and has difficulty learning and understanding facts and concepts due to his short memory. He has an awkward grip on objects such as pencils, crayons and spoons. Chuck has pica (Autism Speaks, 2014) and repetitively sniffs his food before he eats. He is 14 years old.

Characteristics of autistic children such as aloneness, an anxiously obsessive desire for preservation of sameness and abnormalities in a triad of behavioural domains: social, communication and repetitive behaviour that emanated from researcher’s observation and interviews are supported by Leo Kanner in Attwood (2000) and Joshi, Percy, & Brown (2002), and Baron-Cohen (2004) respectively. However, findings of this study refuted Asperger’s description of autism in children to be characterized by speech and active social interactions according to Attwood (2000) as it revealed that, autistic children at NHSS exhibited obvious delays in speech and language and being solitary. Autistic children at NHSS showed strengths and weaknesses of their behaviour in different forms.

Strengths

Notable strengths of autistic children at NHSS that were confirmed by the “mind blindness theory” of autism in the systemizing triad as indicated by Baron-Cohen

(2004) include repetitive behaviour, islets of ability and obsession with systems. These strengths include repeating words and phrases, enjoying activities of interest without getting bored at them, being consistent at activities and having long term memory for facts and events. Autism Speaks (2017) corroborates autistic learners' ability to think visually, their great computer skills, and artistic and musical abilities as strengths as discovered in this study.

Grandin (2014) asserts that memorizing is one of the ways the autistic brain learns. The skill of memorizing which the researcher believes is facilitated by the ability to repeat and commit facts and events to the long-term memory through scripting and categorizing helps autistic children to learn based on concrete concepts and examples. It is also worth noting that per the findings of this study, the autistic learner is able to follow simple rules, instructions and commands such as “eat”, “stop”, “go” and “come”.

Also, the interest and abilities of autistic children at NHSS were found to be their source of motivation and ego. They often enjoyed activities of interest and were able to sustain interest with little to no motivation. Skills and interests that were identified were in the fields of creative art and craft making, outdoor play and sensory activities. Autistic children were also found to have a strong sense of detail and paid particular attention to the minutest of things, not taking anything for granted. Hence, the strengths of autistic children can be harnessed. Teachers may fashion instructions or skill target around these strengths for better attention spans and output from learners.

Weaknesses

Characteristics revealed in this study based on empathizing behaviour supported by Baron-Cohen (2004) encompass socialisation and communication deficits. Socialization deficits were exhibited in autistic individuals as being withdrawn, lacking ability to initiate activities and heavily relying on prompts and reassurance, selfishness, an inability to interact with peers, short attention spans which may be compounded with distractions in their environment and over-reaction to visual and auditory stimuli such as sound and light.

Autistic children showed communication delays in the absence of speech resulting in tantrums and reliance on signs and gestures. Aggressive and injurious behaviour, lack of emotions and sensitivity could not be overlooked. Autistic children who enjoy group activities often imitate one another, revealing their difficulty with initiation. Cognitive delays in development of autistic children were evident in difficulty processing complex information and instructions, difficulty in identifying relevant cues an inability to think symbolically and narrowed interests.

Autistic children rely heavily on routines and are productive with them, their sequence of activities should not be altered as they may get distressed and have difficulty in adjusting to new trend. If their routine has to be changed it must be done with much caution and after much verbal and visual communication from the teacher about the new routine to be used as this may help the autistic child to adapt better to new systems.

4.2.1.4 Interview of Teachers on the characteristics of autistic children

In no particular order the following are the characteristics that teachers identified among their children:

1. Imitation – They imitate negative behaviour faster than positive attitudes
2. Very smart – fully conscious of themselves and what they do. They only sometimes pretend for reasons best known to them. They are cunning and sometimes take advantage of their teachers. They try to read through you
3. Interest driven – They always want to have their way and it is not easy to get them to do an activity they are not interested in
4. Hyperactive with short attention spans – They are extremely hyper and therefore cannot sit down to work or pay attention for long
5. Forgetful – They easily forget things they learn and that makes their development slow
6. Non-verbal – They lack speech and language to communicate and express their needs adequately
7. Aggressive – They have violent behaviour that make them do things such as throwing tantrums and injuring themselves to the point of bleeding. They fight
8. Not sociable – They are hardly make friends.
9. Lack of appreciation of danger – They have no sense of fear, pain or danger.
10. Emotional – They have mood swings and these cannot readily be expressed by pupil and identified by teacher because they cannot speak. These moods usually make them uncontrollable.
11. They do not like to be touched but will touch you at any point in time for several reasons.
12. They have good eye contact.
13. They are selfish.

In summary, the above-mentioned characteristics of autistic pupils of NHSS from the researcher's findings during observation and results of the educators'

interviews were confirmed by (Autism Speaks, 2014; Joshi et al., 2002; Autism, 2016; Ratajczak, 2011 & Baron-Cohen, 2014).

4.2.2 Instructional strategies and existing therapies at NHSS

The researcher observed lessons in Numeracy and Literacy to identify instructional strategies and existing therapies at NHSS. For validation purposes, the researcher also elicited information on the teaching methods and therapies used by autism teachers at NHSS during interviews.

4.2.2.1 Observation of instructional strategies and existing therapies in Numeracy and Literacy Lessons

The researcher through observations found that teachers in NHSS adopted the following instructional strategies and therapies as indicated by (Autism Speaks Incorporated, 2012):

Instructional Strategies employed in NHSS

1. Discrete Trial Teaching – Also known as the Lovaas model – target skills and behaviours are broken down into achievable bits for the child. For instance, if Superman’s target for the term is that he should be able to feed himself, he is given smaller goals to learn to have a firm grip on his spoon, to scoop and direct the food to his mouth correctly without spilling the food on his table or the floor
2. Demonstration – Teachers act out instruction for children to emulate. Here, teachers tend to use a lot of prompts and repeat the instruction till all the children get involved in the activity.

3. TEACCH program (pictograms) – Training and Education of Autistic and Related Communication Handicapped Children (TEACCH) – capitalizes on visual strengths of autistic children (PECS/pictograms)
4. Applied Behaviour Analysis – Helps to promote positive and adaptive behaviours among autistic children by understanding behavioural function and interactions with the environment. With this strategy, the teacher reinforces concepts and ideas by demonstration and repetition

Therapies employed in NHSS

1. Individualized Education Plan – Targeted one-on-one education where every child is taught on a different level
2. Sensory Integrated Therapy – Helps to process senses in a more productive way

4.2.2.2 Instructional strategies and existing therapies identified by teachers in interviews

Teachers identified the following as instructional strategies and therapies they employ in teaching the autistic children:

Instructional strategies employed in NHSS

1. Demonstration – The teacher begins the task and prompt the pupils to do likewise. For example, if the activity is water play, to get some of the children to participate they would have to put their own hands in the water and begin to play.

2. Hand-over-hand or hand-on technique – Especially for children who have bad hand eye coordination, teachers have to guide the children in activity by holding their holds as they work.
3. Picture Exchange Communication Systems (PECS) – PECS are also referred to as pictograms are symbolic or graphic cards that bear simple instructions on them which are shown to the children to help them understand verbal instructions they are given.

Therapies employed in NHSS

1. Individual Educational Plan (IEP)
2. Multi-Disciplinary Therapy (MDT)

The findings from researcher's observations on the instructional strategies and therapies used by autism teachers in training autistic children were confirmed after interviews with teachers. Teachers and researcher alike, noted that Demonstration and PECS were actively used in the classroom. Teachers admitted that they used Discrete Trial Teaching which refers to broken down achievable targets for the learner, better known to them as IEP. However, IEP is identified as a therapy according to Autism Speaks Incorporated (2012) and not an instructional strategy for teaching autistic children. Applied Behavioural Analysis. It is worth noting that, IEP deals with targeted one-on-one training where learners are taught at their respective levels as purported by Autism Speaks Incorporated (2012).

On the premise of the structure and development of the autistic brain as alluded by Bilimoria (2016) and the University of Cambridge (2016) in relation to the function of the autistic brain and how it learns as mentioned by Grandin (2014), instructional strategies such as Discrete Trial Teaching, Demonstration,

TEACCH, PECS used at NHSS are helpful in training autistic children because autistic individuals think and develop concepts based on concrete examples they are provided.

The autistic brain learns by memorizing, scripting and categorising information. Teachers at NHSS teach with concrete examples by demonstration, repetition and reinforcement of good behaviour. Also, PECS employ the visual minds of autistic children which facilitates communication between teacher and learner.

Both researcher's observation and interviews proved that IEP was a therapy used by teachers in NHSS. On the other hand, the researcher and sensory coach agreed that SI therapy is used in the school, while all teachers mentioned MDT as a therapy employed in NHSS during the interviews.

Instructional therapies and therapies were not deliberately used by teachers during Numeracy and Literacy lessons, which they readily admitted in interviews. They use them more in Daily Living Skills training and extra curricula activities. Nevertheless, they confirmed that the therapies they identified have been helpful in training autistic children at NHSS especially in gaining independence over the years. Two out of the three teachers mentioned during their interviews that for them, independence of the children in daily life skills form their priority and not the child's literacy level. This mindset influences their delivery during academic sessions of the autistic learner's routine.

4.2.2.3 Analysis of IEP report of autism pupils at NHSS

The researcher adopted document analysis to investigate how helpful instructional strategies and therapies used at NHSS have been in educating autistic children. At

NHSS, pupils' folders contain an IEP form that has details of the pupil's history, diagnosis, medication, Present Level of Performance (PLP), Activities of Daily Living (ADL), academic skills, prognosis, annual goals, ICT report and Psychological report form a health specialist. For the purposes of this study, the researcher paid attention to psychological reports, each child's PLP which includes attention spans and sensorimotor stage; academic skills comprising pre-reading, pre-math and pre-writing skills; annual goals and social and emotional behaviours.

Psychological report serve as professional or medical evidence that sampled children had autism or autism tendencies to suit this study, thereby, validating the results of the study. Analyzing annual goals helped the researcher to determine whether or not individual targets were achieved by the next academic year with the instructional strategies and therapies the pupil engaged in. The researcher examined the development or not of academic skills and attention span of pupils. These parameters were analysed considering severity of characteristics of the pupil, school attendance and history of pupil. Evaluating the social and emotional behaviours of the pupils was necessary as Grandstaff (2012) indicates its enormous effect on the education of autistic children. Evans & Dubowski (2001) also reveals that Art therapy is helpful in improving the social needs of high functioning autistic individuals

IEP results of pupils in the test sample of this study were developed from other assessments for students with autism or special needs used by the school. These include the Brigance Inventory of Early Development and the basic skills checklists by Marlene Breitenbach, M.S.Ed., BCBA. However, recently, the

Education Coordinator and an expert in special needs education have developed an observation form which brings together varying skill sets from expert experience and existing assessments that suit teaching and learning in the school which is now used.

There were inconsistencies in the IEP as not all children had reports on all categories. The researcher analysed based on what was available in each child's folder. Below is the analysis of each child's IEP. Over the period of this study, all the children were taught with the same approach and regularly engaged in therapies at NHSS. The number of IEP reports available to the researcher for analysis was dependent on when the child enrolled as a pupil of the school or how many reports were compiled in folders at the time of study. Kindly refer to (Appendix E) for detailed analysis of IEPs of each autistic learner of the test sample.

These were evident in the achievement or otherwise in autistic children of NHSS based on annual IEP and termly MDT goals for autistic children:

1. Pupils who had attended school regularly showed a steady but gradual improvement in skill acquisition.
2. High functioning autistic children who attended school often showed development in their academic skills and behaviour.
3. Pupils who did not attend school regularly showed stagnation in development, and in a few cases, retrogression.
4. For non-apparent reasons, some pupils showed retrogression in their academic performance.
5. Older pupils showed better developed academic skills.

6. Pupils who had attended other schools before enrolling in NHSS showed better developed academic skill sets.

4.2.2.4 Usefulness of the identified instructional strategies and existing therapies

Autism educators at NHSS were interviewed on how influential their teaching methods and therapies have been in Numeracy and Literacy education. All three teachers interviewed admitted that they do not use therapies identified during Numeracy and Literacy lessons. The sensory coach mentioned that sometimes when pupils exhibit unacceptable behaviour, they are taken through SI to help them relax as it is sometimes helpful for the pupils.

Nevertheless, they confirmed that the therapies they identified have been very helpful in training autistic children at NHSS especially in gaining independence over the years though not helpful in teaching academic skills. Teachers say that for them, independence of the children in daily life skills form their priority and not the child's literacy level.

4.3 Presentation and discussion of findings for research objective two

Objective two was to design and propose art therapy as an intervention for educating autistic children Literacy and Numeracy at New Horizon Special School in Accra.

4.3.1 Art Therapy as an instructional strategy for teaching autistic children at NHSS Literacy and Numeracy

Art making process was not interrupted unless researcher needed to serve as an extension of the autistic pupil's ego. The researcher provided a variety of tools

and materials for the children, and the art room of the school was used for therapy sessions. The researcher used art therapy as assessment and as remedy and discusses the art of the children with the Naumburg theory based on the theory of psychoanalysis – Dewey, Freudian and Jungian theories of personality, development and learning, and the Vygotsky theory.

It is worth noting that the researcher did not employ conventional art therapy diagnostic tools such as the House-Tree-Person (HTP) due to the nature of the autistic pupils (Buchalter 2004). Deficits in speech and language, inability to verbally communicate and cognitive delays made it necessary for the researcher to choose activities and directives that did not require object drawing as autistic pupils at NHSS were unable to do so. Autistic individuals have challenges processing information and instructions, in some cases they ignore instructions completely.

In view of these, activities that encouraged free self-expression of the unconscious formed the directives for art therapy sessions for analysis with psychoanalytic and cognitive development theories. Sometimes, when autistic pupils were agitated they were not given any directive but were allowed free-expression of self. Due to aggressive behaviour, lack of sense of danger and pica by some pupils, the researcher chose harmless tools and materials to eliminate the risk of injury during art therapy sessions. Art therapy directives were inspired by (Buchalter 2004) and modified to suit autistic pupils. Directives were targeted at harnessing the strengths of autistic learners and minimising their weaknesses.

4.3.1.1 Interpretation of autistic child art samples

The art therapy sessions were conducted in groups and individually. Group sessions were aimed at encouraging self-expression and diminishing social and communication deficits as the sessions were in progress. One-one-one sessions were interpreted according to Freudian theory of psychoanalysis, the Vygotsky theory and Piaget's theory of cognitive development.

Group art therapy sessions

Theme: Paint with your eyes closed

Available materials:

The researcher set up an art table of a wide variety of tools and materials such as coloured pencils, felt tips, paints, white paper, coloured paper, art paper, scissors, jumbo crayons, paint brushes, foam, stencils, puppets, play dough, palette, felt, erasers, chalk pastels and glue among others.

Procedure for data collection:

Pupils of the junior autism class together produced the artworks in Plate 4.1 to 4.4 during a group art session. In foam painting group session, autistic pupils were given one large paper and expected to paint as they individually chose their tools and other materials to work with. They were required to paint with foam with their eyes closed.

Intention of the directive:

Painting with eyes closed was meant to help autistic pupils to freely express themselves as they loosen up. This directive allows for unconscious mind to be revealed.

To start the session, the researcher welcomed the pupils and sang a few songs with them to warm them up into the session. The researcher had the children stand at each corner of the paper, and the directive for them was “paint with your eyes closed” though they hardly kept their eyes closed even with prompts. Sherry and Jeromy were on one side of the table and Leo and Griffy on the other.



Plate 4.1: Sherry “Foam painting”

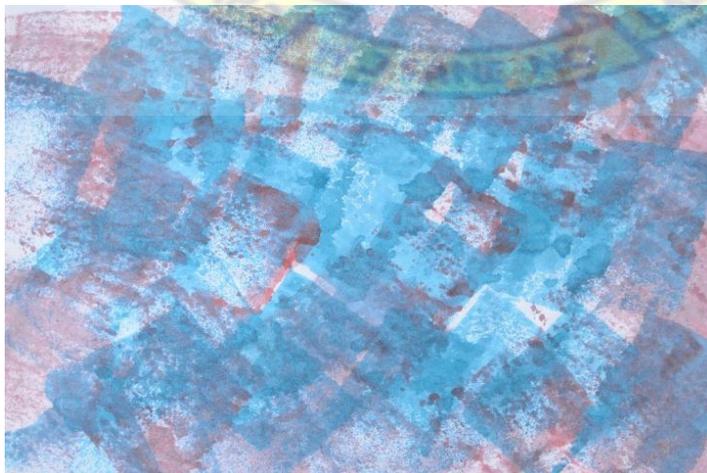


Plate 1.2: Jeromy “Foam painting”

Sherry first took initiative to begin her art by picking up a piece of foam, selecting her colours and squeezing generous amounts of red and blue on the palette. She started by dubbing her foam into the red paint on the palette to print. Immediately, Jeromy and Leo did same and printed on their sections on the paper. Griffy on the other hand dipped his hands in the paint and spread it on the paper. Sherry became the source of motivation for the group and that resulted in much imitation from Jeromy. When Sherry stopped printing in red she changed to blue and Jeromy changed to blue as soon as he noticed she had changed colour, he did same while Leonardo kept printing in red.



Plate 4.3: Leo “Foam painting”

In Griffith’s process of spreading his red paint on his section of the sheet of paper, he accidentally spilled water on the paper and this caused Jeromy to tear his section of the paper off and move to the second table in the art room to continue working. Sherry began to shout, “OH!” while Griffy and Leo stood helpless.

Upset that her art had been destroyed and her art making process interrupted, Sherry became very apprehensive and later defensive. She squeezed the blue paint into her palm on the blind side of the researcher and smeared it in her apron and on the table. Anyone who tried to come close to her received their share of the paint on them because she was upset with the incident. Finally, all four of them returned to their classroom.



Plate 4.4: Griffy “Foam painting”

Theme: Make your face masks

Face masks production was reserved for pupils in the senior autism class as they had developed fine motor skills and could use a pair of scissors with minimum risk of injury.

Available materials:

Materials were provided and the art table set up prior to the start of the session – paper, scissors, pencils, glue, cutters, strings and glitter were available.

Procedure for data collection:

When the pupils arrived in the art room for the session the researcher welcomed them, the pupils went ahead to introduce themselves and sung their favourite action songs with the researcher. The researcher explained their tasks of creating their own masks and supervised them as they worked. Supervision was necessary especially during the cutting of eyes, nose and mouth on the card.

Pupils were excited and realised some fulfilment as they worked. This was evident in their facial expressions such as smiles and laughter, and gestures. Hyperactive pupils channelled their psychic energies, according to Jung, into art making processes.

Intention of the directive:

The directive was targeted at helping pupils artistically develop their self-image as their face masks reflected “what they looked like”.



Plate 4.5: Aidy “Face mask”



Plate 4.6: KayCee “Face mask”

Theme: Cut and Paste



Plate 4.7: Group butterfly

Available Materials:

Paint, cardboard, coloured paper, art, paper, scissors, wire, glue, water and brushes were available for the activity.

Procedure for data collection:

The cut and paste exercise to create a butterfly with a beautiful back brought together pupils in both junior and senior autism classes in a group art session. As usual, it all begun with warm up songs and some exercise to keep the pupils active and alert. The researcher explained the activity of “cutting and pasting” to the pupils.

During this session, roles were shared to suit the skill sets of the pupils. Therefore, they were a support for one another – some pupils cut and tore up the paper while other glued them to the butterfly. Pupils who could not do either cutting or pasting painted the back of the butterfly to enhance its beauty. It was a very active session which brought much fulfilment to the pupils.

They were better behaved, had better communication and interaction skills, some were helpful and others selfish, their weaknesses were diminished and every pupil took an initiative to do one thing or the other.

Intention of the directive:

This was to encourage social interactive among peers help autistic individuals relate to one another by helping and sharing.

One-on-one art therapy sessions

1. Aidy

Aidy hardly has her emotions expressed on her face. The task of creating her self-image was met with much hesitation. Among many colours of felt, art paper and wire, she chose pink, blue and yellow respectively with much prompting, which is not typical with Aidy. This process was facilitated by talking her through the parts of her face to facilitate her understanding of the activity.

Through the process of arranging the pieces, she misplaced them and efforts to help her appropriately do so was met with a bad temper and havoc in the art room. With much effort, the researcher was able to get her back to continue with her work. She would refuse to look at her art while pasting the pieces, would use the paper glue in excess and finally came out with an inverted face. This art when turned upside down shows a sad face, see Plate 4.8.



Plate 4.8: Aidy “Self-image”

Aidy often scribbles in a linear motion. This scribbling nature of her art reflects the scribbling stage which is the first stage of self-expression of Viktor Lowenfeld's theory of artistic development. This stage usually occurs between the ages of 2 and 4. In Plate 4.9, Aidy was relatively composed as she worked. On arrival at the art room, she looked closely at the set-up of tools and materials at the table for a few seconds, and sat on the chair and proceeded to pick a paint brush and smelled it without any word from the researcher. The researcher welcomed her to the session and gave her instructions to colour herself in the shapes.

Immediately, she dropped the brush and picked up a yellow chalk pastels. Without knowing what exactly to do or acting on instruction, the researcher repeated, "Aidy, colour yourself." She dropped the yellow pastel and picked up a red one, and began to colour with much pressure in her hand. When she finished colouring, she shouted spontaneously in an unmodulated voice till she picked black as her next colour. She coloured quietly till she was done and then coloured the red card with a grey crayon. She ended the session by colouring the rectangle blue and left the art room immediately she was done.



Plate 4.9: Aidy "Colour yourself"

The cognitive development of Aidy was interpreted based on the Piaget's theory, and was found to be at the pre-operational stage where she has developed language and mental imagery primarily through egocentrism – seeing the world from only her point of view. This stage is typical of children between 2 and 7 years. She was also observed to be smelling objects to identify and learn they were by name. The character of smelling is unique to children below the ages of 2 and is referred to as the sensorimotor stage of the Piaget's theory of cognitive development. The social behaviours and environment of a child have an effect on a child's intellectual development according to Lev Vygotsky, hence, the “Vygotsky Boom” of interpersonal relationships which believes that learning occurs in zones. In Activities of Daily Living skills, Aidy is independent but in academic skills and strategies she requires the assistance of an adult. Hence, exhibiting both the Zone of Proximal Development (ZPD) and More Knowledgeable Other (MKO) zones respectively. It can be said that Aidy's delay in language is the reason she is unable to construct her own knowledge academically, which affects her development.

Plate 4.10 is what Aidy is capable of coming up with – an emotion loaded art, when she feels inadequate, moody or under duress. The Freudian theory discloses Aidy's personality and defense mechanisms. Aidy operated in the Id as described by Sigmund Freud – she is highly impulsive and faces imbalances in her immediate desires in relation to realities of her circumstance at a particular point in time. She lacks a sense of judgement, tolerance and synthesizing information. Her art is a safe mode for displacement of her emotions and unmanaged stresses as a defense mechanism. She sometimes attempts to destroy her art after creating it. She tends to overreact in situations of heightened anxiety. Aidy does not show

obvious sexual attractions to males and has developed toilet training. This suggests that she may have dormant sexual attraction to the opposite sex in terms and this is representative of a 5 to 12-year-old.



Plate 4.10: Aidy “Free expression”

The directive for this art therapy session was to draw your family as in Plate 4.11. The researcher explained that a family is made up of mum, dad, sister and brother. Aidy preferring wet medium went for green paint to start with. As she painted with her fingers, she mentioned, “mummy” a couple of times. When she was through with that, she mentioned her sister’s name, dipped her finger in the purple paint, looked at the researcher seemingly for approval and went ahead to paint. After that, she mentioned her second sister’s name and picked a little blue paint and applied it on the paper. Then she shouts, “Aidy, Aidy” and dips the tip of her finger into the red paint and applies it on the left and right bottom corners of the paper, followed by yellow in the center on the green colour representing mummy.

Aidy hands over her art to the researcher while walking out of the art room. The researcher reminded her that she was not done drawing her family because she

had not drawn daddy. She returned to the table reluctantly and dipped her finger into the orange paint and smeared it all over the work.



Plate 4.11: Aidy “Draw your family”

For no apparent reason, Aidy was moody, was shouting in an unmodulated voice and will not sit in the classroom but loiter on the school compound seemingly looking for something. The researcher tried to probe what was on Aidy’s mind by asking her why she was not in class with her friends and what she was looking for. Aidy will not answer and anytime she got in front of her classroom door she would shout.

The researcher took Aidy through a session. When Aidy got to the art room she sat at the table and picked up a brush and began to paint while murmuring, and would shout in a very loud voice intermittently. At the end of the session Aidy smiled at me, and walked out of the art room laughing, swinging her arms and clapping her hands as she headed to her classroom. Plate 4.12 said it all for Aidy that day. Her art making process was relatively calm.



Plate 4.12: Aidy “How do you feel?”

Aidy experiences a busy inner world as seen in her relationship with her art which can be related to her personality.

2. Jack

At the beginning of this art therapy session, Jack was welcomed to the art room and was taken through the activity for the session. When researcher instructed Jack to create his face, he started by pointing to his facial features while mentioning them as best as he could remember.

Out of a wide range of coloured felts, he chose green to be the support for his face and picked same for his head. He got up from behind the table and took a walk around the art room and returned to the table in approximately a minute shaking his head vigorously asking, “are you there?” without eye contact. The researcher replied, “Yes, Jack I am here.” “Pick your eyes.” “Fix eyes on head.”

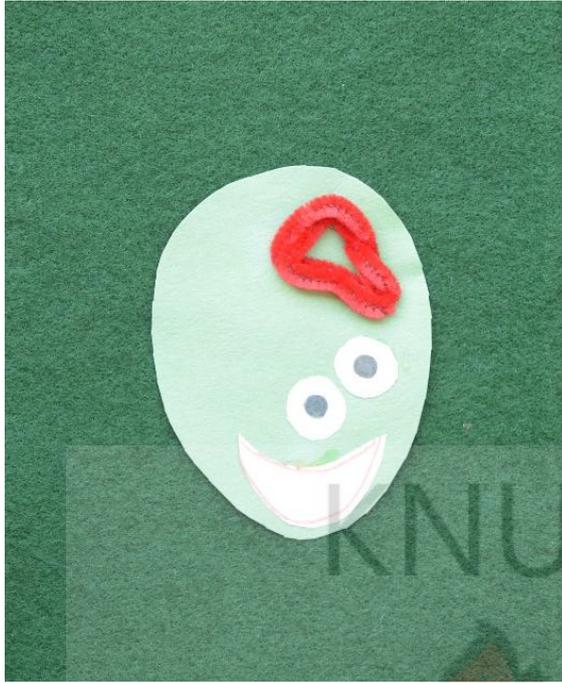


Plate 4.13: Jack “Self-image”

Jack still shaking his head, picked his eyes, nose and mouth and closed his eyes while gluing them in place on his head. After the session, the researcher asked, “Who is this?” and Jack responded and admitted by mentioning his name emphatically while pointing at the image.



Plate 4.14: Jack “Put it all here”

After lunch, children had returned to their classrooms to have a rest from the day's activity and Jack was struggling to sleep because of his sensitivity to stimuli. As if that was not enough hyper King, would call out Jack's name and say a few words in vernacular while giggling. Clearly, Jack was upset and shouted, "stop calling my name." The class teacher instructed King to be quiet so that Jack and other pupils who wanted to sleep could have some rest.

King would not stop and did same at least twice after Jack's warning. Jack's response to such behaviour from his colleagues was nothing short of aggression – he got up from his seat with his fist above his head ready to hit King as he took heavy steps towards King. Jack got to King at his desk and started hitting the back of his head and back so hard saying, "Stop! Stop! Stop!"

The teacher had to intervene by separating them to make sure that none of them got hurt in the process. The researcher took Jack to the art room and asked, "Jack, what happened?" He responded while pointing out of the door, "King! I will beat" while flapping his left hand in the air. The researcher told Jack to sit at the table and asked him to do it all on the paper and Amazingly, he came up with Plate 4.14.

In Plate 4.14, Jack dipped his finger in black paint and washed it into the water for painting. He scooped red paint with his left index finger into his right palm, rubbed both hands together with a little of the greyish water he had earlier created and painted parts of the paper black with the water as he mentioned "King". After that, he hit the paper hard with his red palm creating prints. Jack washed his hands at the wash hand basin in the art room and repeated the same process in colour blue and painted with the brush over the right side of the paper.

Jack involved the researcher in his art as asking to join him paint. He addressed the researcher saying, “Beat King.” The researcher reluctant to introduce new elements to influence Jack’s art assured him that he is doing a good job and is capable of finishing up his art independently. After reassurance from the researcher, Jack went ahead to paint all untouched areas of the paper with a brush and yellow paint. He did so with much caution and diligence ensuring that he didn’t destroy what he had already done. As usual, when he had finished painting he gave his art work to the researcher saying, “Finish beat King” with an apparent good countenance though not emotion. He got back to class, completely ignoring King and slept for a few minutes before siesta was over.

At the close of day, Jack visited the art room willingly for no apparent reason and produced Plate 4.15 just before he went home. Jack dubbed the paint left over on the palette with a partially wet foam and stamped on the paper with much pressure in his hands in red and yellow. He ended by printing with green paint that D-D, who joined him in the art room was using.



Plate 4.15: Jack “Free expression”

Jack's art as analysed by Lowenfeld's stage of artistic development shows that he is making first representational attempts through the presence of shapes which represent one Plate or the other in his art. This is representative of the pre-schematic stage and is significant to 4 to 7-year-olds. In executing Plate 4.14, he displayed an enormous sense of space and this is characteristic of the schematic stage which occurs between the ages of 7 and 9.

Freud's theory of psychoanalysis make us understand that Jack's aggressive personality is as a result of an imbalance in interactions in his mental structure. Therefore, though Jack was aware it was wrong for him to beat King he did because he demanded an immediate positive response from King to his displeasure in noise making. His ego is under developed because he does not compromise his feeling and often requires immediate gratification. Jack's psychosexual development is observed to be in the latency stage between the ages of 5 and 12 as he has no obvious attractions for the opposite and enjoys sports.

According to Piaget's theory of cognitive development, Jack may be classified in the pre-operational stage as he gains knowledge through language and his perception of the world as he interacts with his environment. This stage is significant to 2 to 7-year-olds.

3. D-D

D-D took advantage of Jack's session in the art room to create Plate 4.16 while he was on his way back to the classroom after he used the washroom. He observed Jack while he was doing his art, sat on a chair, reached for paint and gazed and smelled it. The researcher gave D-D a sheet of paper he could work on if he chose

to. He imitated Jack by applying paint to his palm and printing repeatedly on the paper in different colours till he did no more, and then returned to his classroom.

D-D was at an activity in class when he blocked his ears and started screaming spontaneously. Before long, he was up on his feet jumping and throwing his arms in the air. D-D was out of control. The sensory coach escorted him to the sensory room where he lay prostrate on the bean ball, rocking back and forth repeatedly till he calmed down and was sent back to the classroom to continue his activity.



Plate 4.16: D-D “Hand prints”

On his way to the classroom, D-D was muttering words that could not be heard. He would say “peepee” while pointing to his penis supposedly indicating that he wanted to use the washroom. It is worth noting that, when he wants to use the washroom he only says, “peepee” without pointing to his penis. He was not permitted to use the washroom because he had done so just before the lesson began for that period.

He then resorted to requesting to go the computer room where he has been banned from going because he visits immoral websites, and it is near impossible to get him out of the computer room when he has to leave. D-D started throwing tantrums in the corridor to insist on his way to be in the computer room when his request to use the washroom was refused. D-D enjoys art, therefore, as a matter of interest his class teacher requested that he does art instead of continuing with his activity in the classroom. The researcher prepared the art room to prepare to conduct a therapy session for D-D as he was getting even more aggressive and uncontrollable for his teachers. The researcher's directive for him was to paint his body and therefore, drew the basic parts of the body – head, torso, hands and legs for him to paint in Plate 4.17.

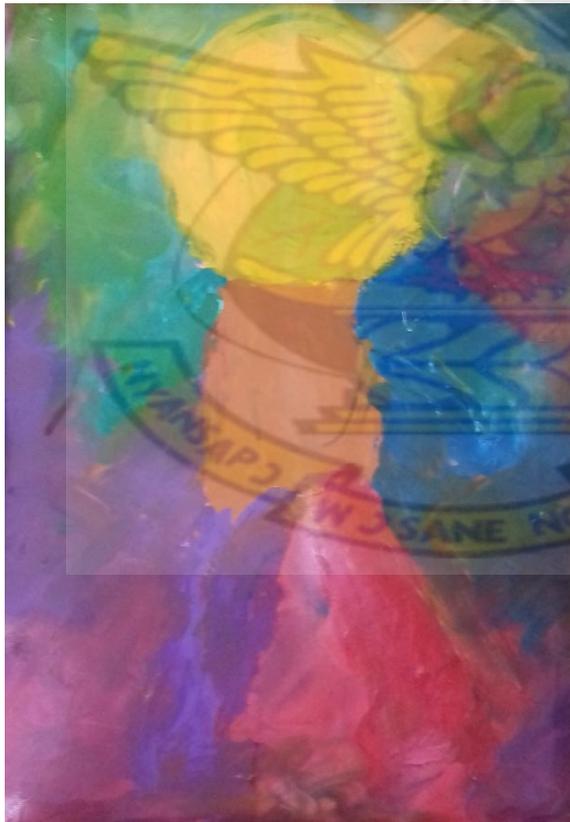


Plate 4.17: D-D “Paint your body”

When D-D got to the art room, he was very rowdy and started turning the art materials and tools set up for the session on the table upside down. The researcher repeatedly asked D-D to calm down and prepare to do some art. In a few minutes, he was settling down and walked to the table to take a seat. The researcher welcomed him to the art room for a session, showed him the tools and materials he had available to him to create his art and then gave him the paper that had a body drawn out on it, which he was expected to work on. D-D did not admit this paper as a support to do his art on and attempted crumpling it but was immediately stopped him from doing so by the researcher. He reached for other sheets of paper on the table and scribbled with coloured pencils in Plate 4.18 and felt tips in Plate 4.19.



Plate 4.18: D-D “Free expression 1”



Plate 4.19: D-D “Free expression 2”

The process of producing art in Plate 4.16 and 4.17 were both calm, focused and hurried. D-D’s scribbling reflects that he is at the first stage of self-expression which is representative of 2 to 4-year-olds as pertaining to Lowenfeld’s theory of artistic development.

The researcher put the sheet of paper that had the body drawn out on it in front of D-D as he sat behind the table. This action was met with slight agitation from D-D as he picked a handful of coloured pencils from the basket and repeatedly shuffled them in his hands from right to left, gazing closely at them with his lower jaw and teeth jutted and shaking his head simultaneously in the motion of his hands.

Finally, when D-D agreed to start painting his body he opted for yellow for his head and finger painted in a circular and linear motion. He painted his left arm green and his right arm blue, painted his torso orange, his left leg purple and right leg red. While painting his legs, he would shake his legs as he stood and would say, “peepee” as he rubbed his penis continuously with his left hand till he finished painting. It was interesting to observe that the same pressure and motion

with which he was rubbing on his penis was that which he painted his legs with his fingers in red.

After D-D was done, he tried to pour the remaining red paint on the right leg of his art in a bid to destroy his art after the researcher mentioned to him that it is wrong for him to rub on his penis like he was doing while painting. He reacted by throwing the basket of felt tips up in the air because he was prevented him from destroying his art.

Immediately, D-D was required by the researcher to pick up all the coloured pencils from the floor. He did so religiously, put them all in the basket and back on the table; then he walked out of the art room fidgeting with his fingers. In a few minutes, he was back again and produced Plate 4.20 with no prompts from the researcher with the remaining paints on the palette by foam printing. After which he proceeded to his classroom to continue his activity, looking less exhausted and relieved from his stressor at the time.

Sublimation is what may have occurred through D-D's art process. The art session controlled and diverted instinctive sexual energy from its sexual aim to art making where could release all tension. The circumstance where he was unable to manage his sexual instinct or libido and its transitions into moral activities and limitations was compounded by his undeveloped ego. This assertion is based on the Freudian theory of psychoanalysis (Naumburg 2004).

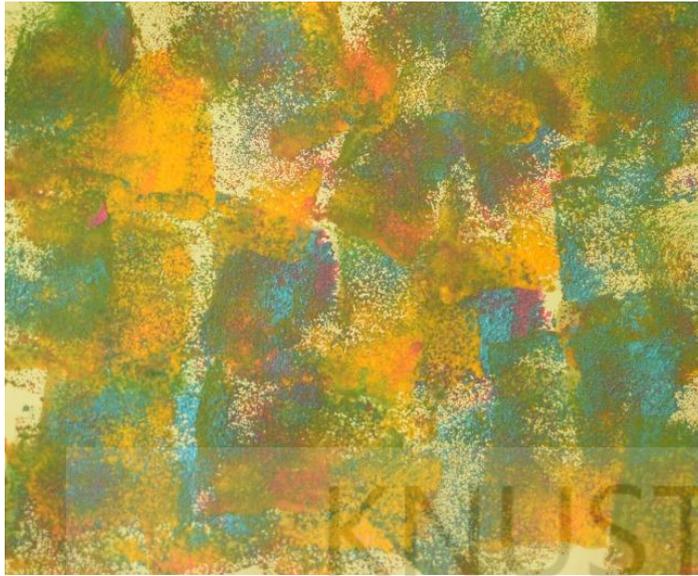


Plate 4.20” D-D “Free expression 3”

Freud’s theory of psychosexual development explains D-D’s sexual attraction to the same sex. D-D will take sit on his male colleagues and face-to-face with them, making attempts to kiss their faces and hands. Though his feelings for the opposite sex appear dormant and it may be concluded that he has grown into the latency stage (5-12), his obvious attraction to individuals of the same sex is likely to be a result of poorly management of his sexual energies at his current stage of psychosexual development.

Cognitive development theorist, Piaget revealed that though D-D is not able to think abstractly he is partially at the concrete operational stage (7 to 11 years) of development because he learns through concepts and concrete operations. However, when the appearance of an object changes he is in unable to relate to the object based on his knowledge of its characteristics. He also operates in the pre-operational stage (2 to 7 years) because he learns via mental images created by his personal view of the world. D-D is unable to learn much on his own as he relies on people to assist him acquire certain skills and strategies classifying him in the

More Knowledgeable Other zone of Vygotsky's theory of cognitive development. It is also worth noting that D-D learns through hands-on and practical experience with subjects.



Plate 4.21: D-D "Draw your family"

D-D was asked to draw his family and did so with no hesitation as he immediately picked up coloured pencils of his choice and started scribbling. He would mention what he was scribbling represented in a low tone of voice. The researcher observed that he spent more time and attention drawing his daddy in green. He drew his mum with a brown coloured pencil. He scribbled his head in blue and purple, and his body was represented by a red stroke which he drew with force in his hand. He drew his body outside his family.

4. KayCee

From earlier observations by the researcher over the entire period of study, KayCee was seen to be calm and composed and never reacted to stimuli and stresses by disruptive behaviour. The researcher's first session with KayCee was

typical of him. He was welcomed to the art room and his first directive required him to create himself with art materials provided in a wide range of colours – felt, paper, glue and wire.

KayCee seemed to be shy and often used his peripheral view. After the directive was given and explained to KayCee, he would give sudden short smiles whenever he had eye contact with the researcher and immediately look away. KayCee did this a number of times till the researcher prompted him to begin his activity.

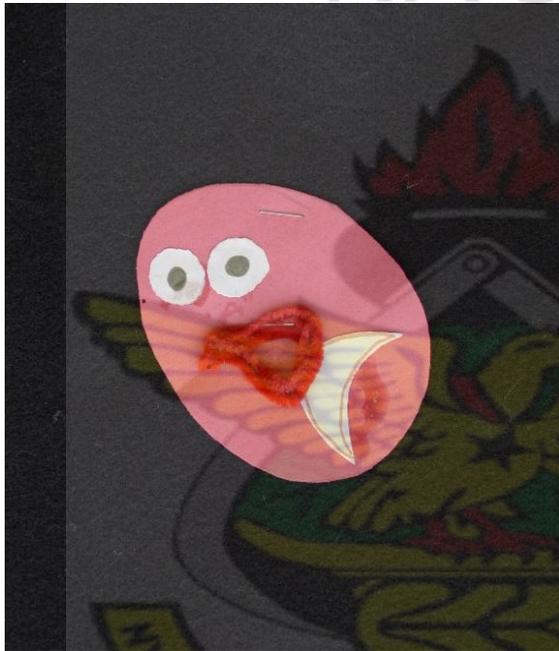


Plate 4.22: KayCee “Self-image”

He then reached for black felt and put it in front of him. The researcher prompted him once more to work, as he sat looking away from his art. KayCee went ahead to pick a red paper to represent his head, selected his red nose, eyes and lips from the tray on which the pieces were. He placed the red head on the black felt surface after which he had challenges with where to place and glue his facial features.

The researcher reassured KayCee of his ability to paste the pieces on the paper. From then, he would not look directly at his art as he worked. Using his peripheral view and stealing glances at the researcher, he hurriedly pasted his facial features as seen in Plate 4.22 which is a true reflection of KayCee to anyone who has ever related with him.



Plate 4.23: KayCee “Draw yourself”

In another session, KayCee was required to draw himself as seen in Plate 4.23. This activity had no different response from him as he selected black paper from a variety of colours and black felt tip from a wide range of colours. From the right topmost corner of the paper, KayCee scribbled in a uniform motion to the end of the left side of the paper, one line after the other with little emotion. When the researcher prompted him to change his felt tip, he chose a red one and traced through the black marks he previously made on the paper.



Plate 4.24: KayCee “How do you feel?”

KayCee’s third session required him to communicate or express his emotions. Interestingly, KayCee chose to use green paint which was a shift from his previous choice of black. KayCee like in his previous art painted from the left topmost corner to the left of the paper, and line by line finger painting in strokes. KayCee could not complete his art without a touch of black, hence, the black strokes as seen in Plate 4.24.

The scribbling and strokes evident in KayCee’s art is representative of the first stage of self-expression in Lowenfeld’s theory of artistic development. This stage is attributed to children between the ages of 2 and 4. Piaget’s theory of cognitive development suggests that KayCee is at the pre-operational stage of 2 to 7 years as he develops knowledge through language spoken around him. The Vygotsky theory classifies KayCee in the zone of More Knowledgeable Other because he lacks the ability to acquire skills and strategies independently.

The researcher often acted as an extension of KayCee’s ego with several prompts and reassurance during his art making whenever he was in a state of uncertainty

and psychological imbalance between what he intuitively does and what he was required to do. KayCee may not be described to be functioning in the id of the mind because he has some control over his instincts but struggles with an undeveloped ego. KayCee was found to have sexual feelings of the latency stage exceptional to 5 to 12-year-old children.

In KayCee's fourth session where he was expected to colour himself, he chose a blue chalk pastel independently to work with. He coloured within, outside and around the shapes in the same colour till the researcher prompted him to use another colour. He picked a yellow chalk pastel to work with. When he finished colouring the entire surface with the yellow pastel, he picked up the blue pastel again and began to colour over the yellow till he noticed the researcher was observing him.



Plate 4.25: KayCee “Colour yourself”

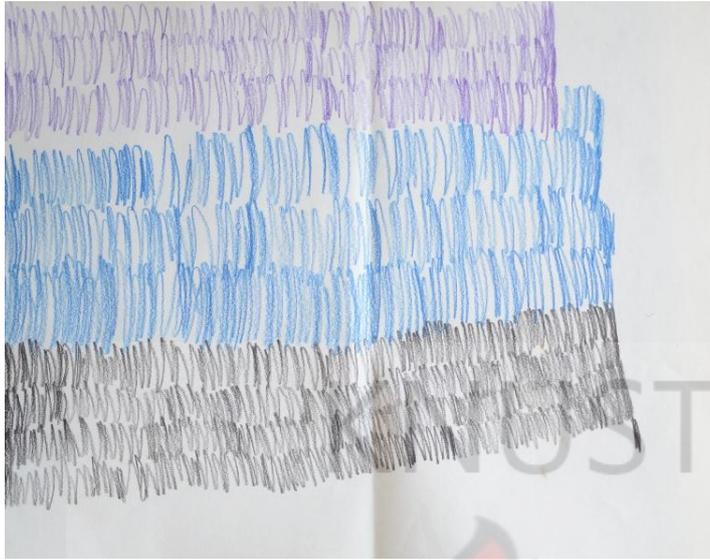


Plate 4.26: KayCee “Draw your family”

In a fifth session with KayCee, he was mandated to draw his family. This time, he did not start colouring from the corner of the paper but, about a quarter way through the horizontal length of the sheet as seen in Plate 4.26. He changed his choice of colours at his own will from purple to blue and then black. He coloured three rows in purple and blue, but coloured four rows in black and dropped the pencil in the basket just when he was about beginning to colour the fifth row.

On completion of this art, the researcher said to KayCee, “KayCee, good job.” “Point to KayCee.” KayCee pointed to the black scribble as himself and to the purple and blue scribbles as his dad after the researcher said, “Point to daddy” on two occasions. When KayCee was asked to point to mummy, he would fidget with his fingers and look away from his art.

5. Leo

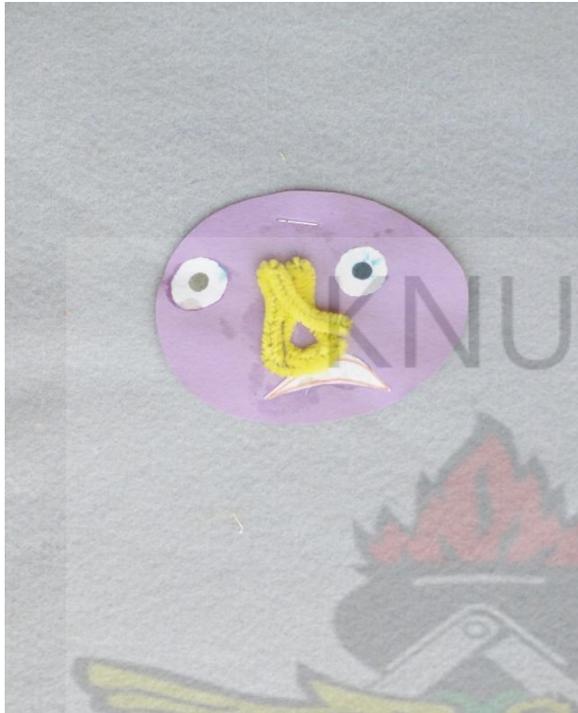


Plate 4.27: Leo “Self-image”

“Lee-O, welcome. How are you?” the researcher asked, shaking his hands. His response was a grin, the researcher smiled back at him and he run off to the table to touch, feel and smell the art material and tools at the table. Leo begins dismantle the arrangement or set up on the table till he is instructed to stop.

The researcher asked Leo to have a seat after which his task was explained to him. He was expected to create his self-image with materials provided for him on the table. Leo picked a number of felts and was asked to pick just one of the lot and he finally chose the grey felt after some time of indecision. His art making process was very playful as he would pick a number of heads, more than two eyes, multiple noses and lips, and shuffle them as he giggled. The researcher prompted

Leo to make a choice of just one of each facial part. With no support from the researcher, he picked a purple head, settled for a yellow nose, sad lips and eyes. He was on his feet for 80% of the session.

Leo placed his head horizontally on the felt. He required the researcher's support to stick the eyes, nose and lips after he had placed them where he would have them be. This was necessary as Leo was interested in playing with the glue. Leo's final product is what is seen in Plate 4.27.



Plate 4.28: Leo "How do you feel?"

In another session with Leo, he would refuse to sleep during siesta and was disturbing his colleagues who were resting on a mat in the classroom. He would walk up to the researcher and point to the playground indicating that he wanted to be outdoors. The researcher took him out to play for a while, and then brought him back when siesta was over to participate in an activity.

While he was playing with toys, he wanted to play with Legos specifically and he showed by pointing at them and walking towards them to reach them. His class

teacher refused to give him the Legos to play with because, he is being introduced to other activities to increase his interest in them. Leo reacted to his teacher's refusal to give him the Legos by throwing tantrum and getting destructive by sitting or lying on the floor, throwing his legs up in the air and throwing toys on the floor.

The researcher carried Leo, sent him out of the classroom and back to the playground to keep him under control. After a while when he calmed down, the researcher sent him to the art room to do some art. The researcher asked him how he felt and with much anger in his face he created Plate 4.28 in chalk pastels as he drew lines crossing each other in different directions while standing.



Plate 4.29: Leo "Free expression"

Leo with all art materials and tools available to him, he swiftly followed his art in fig 4.28 by that in Plate 4.29. He picked up the paper and requested for yellow, blue, red, purple, green, black and white paint by pointing to the colours. The researcher poured minute amounts of each colour on a palette and he dubbed with

foam in red, yellow, blue and purple and stamped on the paper one colour after the other; not mixing colours. It is interesting to note that the colours he pointed to are the colours that are in the Legos. The colours he used in his art are the colours he plays with.

When he finished working on the paper, he smeared the remaining paint in the palette on the table. He returned to the classroom maintaining good behaviour, though he would not have his nap.

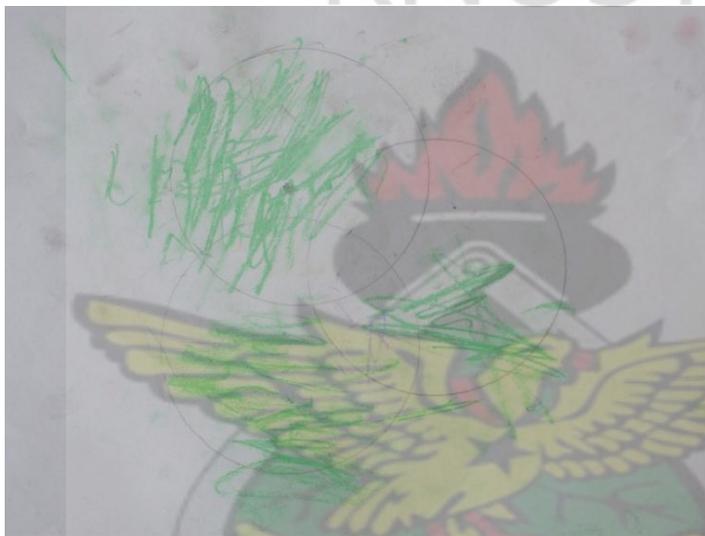


Plate 4.30: Leo “Draw your family”

In a scheduled art session, the researcher welcomed Leo to the art room as usual and had him have a seat at the art table with a paper and materials available to him to work on. His task was to colour within the circular boundaries created on the paper. Leo chose green to do this exercise as he scribbled in Plate 4.30. Scribbling is the first stage of self-expression of artistic development and typical of 2 to 4-year-olds as developed by Lowenfeld.

Leo's cognitive development is at the sensorimotor stage of Piaget's theory of cognitive development. This is confirmed by his smelling and tasting objects, and banging for attention. The sensorimotor stage is exceptional to children under 2. Leo also gathers knowledge, strategies and skills with the help of others. Therefore, he is in the zone of More Knowledgeable Other of the Vygotsky Circle.

Freud's theory of psychoanalysis reveals that Leo operates in the id of his mind where he demands instant gratification of his needs without any compromise. He has developed good toilet habits and was observed to be developing an attraction to adults of the opposite sex. He showed this by playing and communicating with female teachers and completely ignoring their male counterparts in school and avoiding them as much as possible. This behaviour may be due to the Castration anxiety of the Oedipus complex. Leo's psychosexual development according to Freud may be said to be at the phallic stage unique to 3 to 5-year-olds.

6. My Friend

During the first art session with My Friend, the researcher welcomed her to the art room. She was full of excitement and began communicating in gestures and with an unidentifiable language and the little English vocabulary she knew. The researcher kept up the conversation that My Friend had initiated and got her to sit at the table set up for the art session. When the researcher explained the activity of creating her self-image to her. She immediately, got up and walked out of the classroom. All attempts by the researcher and her teacher to get her back to the art room to create her self-image proved futile. Therefore, My Friend does not have a self-image.

However, the next art session was necessary when My Friend began to throw tantrums and exhibit injurious behaviour after she was locked up in her classroom as a means to control her habit of disrupting morning assembly when she is in attendance – a disciplinary measure her teacher had adopted and had been using over a period of time. According to the teacher she is able to stay behind in the classroom and play on her own with the toys and favourite activities in her reach.



Plate 4.31: My Friend “Free expression”

While the rest of the school was at morning assembly, screams could be heard from the classroom which called for the immediate attention of the teachers. While approaching the classroom, banging could be heard. My Friend was apparently banging her head against the head hard enough that she had cuts on her forehead. When the teacher opened the door to get her out, My Friend had literally turned the classroom upside down. She would attempt hitting and biting anyone who came close to her, and she was getting out of control. Responses to questions like “What is wrong?” “What happened?” “What do you want? Point at it” “Do you want to go to assembly?” were nods and tears.

The researcher admitted My Friend in the art room for an art session with no directive, but just for her to express herself without limits from the researcher. Out of this session, My Friend produced Plate 4.31 in much distress. On arrival at the art room. My Friend calmed down a bit, may be due to the change of environment as she may have felt overly confined, restricted and lonely when she was locked up in the classroom.

The researcher took advantage of her relaxed mood to welcome her to the art room and helped her to sit on a chair at the art table, after which they both sung a song that My Friend enjoyed. After singing the researcher gave her paper to work on, and she went ahead to reach for red paint herself. She opened the tube, smeared the paint on the paper and begun to paint with her fingers, smearing the paint on the sheet.

She went through the process of spreading the red paint on the paper as vigorously as she could, still with displeasure in her face till she changed the colour on her own to blue. My Friend put a smaller amount of the blue paint on the paper with a more relaxed facial expression and playfully smeared it with her fingers. She squeezed a small amount of green paint on the table, dipped her finger into green paint and smeared it on the paper. Then she begun to shout her teacher's name, Marie, repeatedly till her teacher showed up. Then she says, "Marie, my love" and her teacher responds by saying, "My Friend and my love, you are fine now?" This session ended on a good note with My Friend's emotions under control for the rest of the day.



Plate 4.32: My Friend “Colour yourself”

In a third scheduled session with My Friend, the researcher introduced the task of creating a self-image. This was once again met with some resistance from My Friend though not as aggressive as when it was initially presented to her. She began to talk as though in a conversation saying a number of things in a language that could not be identified – a sort of baby language with a lot of gestures and intermittently asked, “friend, why?”

The researcher requested My Friend to settle down and hear her next activity. My Friend was expected to colour herself in this session and she agreed to in Plate 4.32 after it was explained to her. My Friend after handling all the materials available to her on the table, chose to put her hands in the paints that had been poured out unto the palette. She smelled and tasted the paint on her fingers and then smeared it in her paint apron. Then she reached for the foam, dipped it in the paint and stamped on the paper creating prints as she stood till she was done and handed her art over to the researcher. While she was in the process, the researcher

asked her what she was doing and she would mention her name and scream in an unmodulated voice.



Plate 4.33: My Friend “Draw your family”

In a fourth scheduled session with My Friend the researcher tasked her to draw her family. Without any hesitation, she did exactly that though rather hurriedly so she could go to the playground as her friends were out playing after siesta.

The researcher drew three circles on the paper with no restriction in execution or choice of material of how to colour family. As My Friend drew with blue chalk pastel in one circle she would mutter a few words. When she was drawing in red, she mentioned her name as she looked at the researcher and drew in blue again in the third circle.

My Friend activities of banging for attention, smelling and sucking while eating are characteristics of the sensorimotor stage typical of children under 2 according to the Piaget theory of cognitive development. Vygotsky reflects that she operates in the zone of More Knowledgeable Other where her learning is dependent on others to acquire new strategies and skills.

My Friend scribbles in her art and shows that she is between the ages of 2 and 4 by Lowenfeld's stages of art development. She responds to her instincts and demands immediate fulfilment of her needs. That is her id at work according to Freud's theory of psychoanalysis. My Friend is also at her anal stage of 1 and a half to 3 years old, evident in developing healthy toilet habits according to the Freudian theory of psychosexual development.

7. Sherry

The researcher was challenged in getting Sherry to do any art as her sessions were after siesta. Often when it was time for her to do art, she was asleep and it was difficult to wake her up. The researcher took advantage of the times she was awake to engage her in some art making processes.

Sherry's first session demanded that she create her self-image in Plate 4.34. Like the other pupils, out of the lot of colours of materials available Sherry selected a red felt, a black head and blue nose. She seemed excited as picked the materials evident by a smile at one side of her face, and much control of herself. It was not surprising to see her replicate her apparent emotion of a smiling face in her self-image. Sherry required no support to glue her facial features in place. She used moderate amounts of glue and exhibited some decorum in her art process.



Plate 4.34: Sherry “Self-image”

On completion of her art, she reached for a sheet of paper on the table and requested for blue and yellow paints by pointing at the tubes and picking up a piece of foam herself. The researcher gave Sherry a verbal approval to pick the paint she needs. She did exactly that and squeezed a small amount of the yellow paint on the table. The researcher pointing to the palette, asked Sherry to squeeze the paint on it instead of the table. She picked up the palette for herself and dispensed the blue and yellow paint on it but this time in large amounts till she was prompted by the researcher to stop. With the foam in her hands and alternating the colours, she dubbed it in the paint and stamped on her paper in Plate 4.35 with much excitement.

It was obvious Sherry was engrossed in her art making process when more than half way her art production in Plate 4.35, she picked a second piece of paper and paint brush for Plate 4.36 and placed it on her lap. She successfully completed her

art in Plate 4.35 and made an attempt to continue in Plate 4.36, when the researcher interrupted and asked her to return to class for another activity. Sherry got restless by the researcher's action and vehemently refused to exit the art room by forcefully sitting on her chair and attacking anyone who would approach her for any reason. She kept the paper she had picked under her arm and began to tear up the other papers till they were taken out of her reach.

The researcher apologized to Sherry for interrupting her art, permitted her to stay behind to continue her artwork with a directive, "How do you feel?" Sherry's smile was replaced with a stern look which she maintained as she produced her art in Plate 4.36. She used the remaining paint of her art in Plate 4.39 and painted with her finger in blue and then yellow.

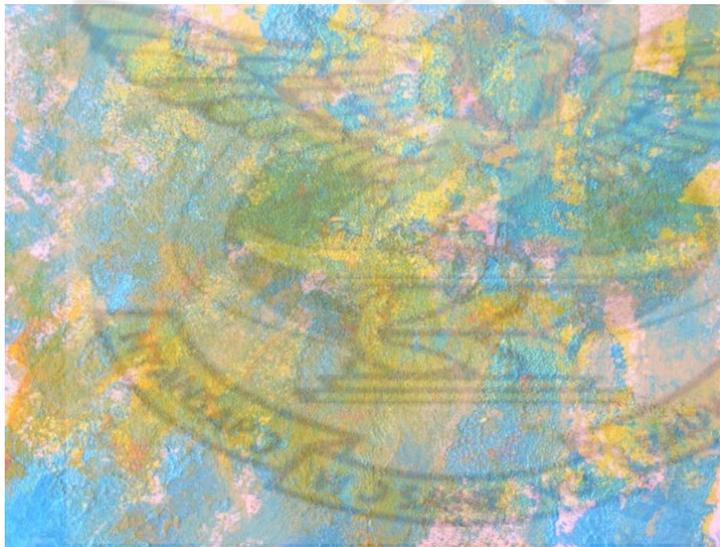


Plate 4.35: Sherry "Free expression"

Sherry was upset enough to throw her brush on the floor and resorted to her fingers as a tool. She picked a small amount of blue paint and smeared it on the paper till the paper started flaking, and then she stopped. Thereafter, she dipped her finger in the yellow paint and worked consistently in diagonal strokes from the

left bottom corner to the right. Sherry completed her art hurriedly, wiped her fingers in her apron, took it off and walked out of the classroom.

In another art session with Sherry, she was welcomed to the art room by the researcher and tasked to draw her family in any material of her choice on a piece of paper with 3 circles. Furthermore, the researcher explained the activity to her and observed her work independently.



Plate 4.36: Sherry “How do you feel?”



Plate 4.37: Sherry “Draw your family”

Sherry scribbled in all directions as she executed her art in red, yellow and green chalk pastels both within and outside the circles in Plate 4.37. The scribbling nature of her art is representative of the first stage of self-expression and is unique to a 2 to 4-year-old child per Lowenfeld's theory of artistic development.

As she drew her family, Sherry would tap the researcher and mention her own name and point to her art. She did this at intervals throughout the session. At the end of her art, the researcher asked while pointing to the red scribble, "Who is this?" and she would respond, "Sherry" pointing to the yellow and green scribbles as well. The researcher for confirmation pointed to the yellow and green scribbles and asked, "Sherry?" and she nods in response and affirmation. The researcher enquired about mum or dad being part of her art and she showed no obvious reactions.

Cognitively, Piaget's pre-operational stage of development best describes Sherry's ability to learn. She develops knowledge through language and mental images formed from her view of the world, which is significant to 2 to 7-year-olds. The Vygotsky circle reveals that Sherry's learning zone is the More Knowledgeable Other where she requires external support.

Considering Freud's theory of the mind and psychoanalysis, Sherry has an under developed ego which causes her to exhibit unacceptable behaviour when her instincts are not responded to promptly. Therefore, she operates in the id of her mind. Psychosexual development theory shows that Sherry is in the phallic stage between the ages of 3 and 5 where she shies away from female adults but makes advances towards male adults especially at play.

8. Jeromy

The researcher had challenges persuading Jeromy to do any art, possibly owing to the introduction of an art session into his routine at a time when he was used to being on his own. In all three sessions, Jeromy looked a lot indifferent in the execution of his art but would laugh spontaneously for no apparent reason at unpredictable intervals. Jeromy was also very well behaved and usually will not cause mayhem. His art processes were very exceptional of him.

The few times Jeromy did any art, he did not stain his clothes though he worked in only wet media. He was very discrete and ensured that his colleagues did not stain his clothes, but was not seen to make efforts not to stain their clothes. Group activities were inconveniencing for him when he noticed his colleagues were messing up. Interestingly, he did not mind his apron getting dirty though he would make sure his clothes did not – he definitely must have had a sense of his personal belongings.



Plate 4.38: Jeromy “Self-image 1”

If his efforts to ensure that he does not get stained by the paint were proving challenging because of the behaviours of others, he would withdraw by moving his seat a foot or two away from the table, or move to another table to work on. In such a circumstance, Jeromy would make an effort to walk over to the art table and pick up what he needed to continue his art. One of such artworks was produced in Plate 4.2 during a group session.

In Jeromy's first one-on-one art session he was obliged to create his self-image with materials provided for him. He refused to use any of the materials available on the table but got out of his chair, walked to a shelf in the art room and began to look through storage boxes of art materials. The researcher asked Jeromy to have his seat while varied materials were brought to him. Earlier, due to the nature of the art predicted to be developed, only dry materials were provided without knowing that Jeromy preferred to work in wet materials.

Among the new materials accessible to Jeromy were paints of different types, pastels, crayons, coloured pencils and felt tips. Immediately, Jeromy became enthusiastic about the session. He picked a sheet of paper, reached for his preferred colours of paints – purple, yellow and orange, and handed them over to the researcher to be opened for him. The researcher did so, and poured out reasonable amounts on a palette for Jeromy's use to his pleasure as he giggled and received the palette.



Plate 4.39: Jeromy “Self-image 2”

First, Jeromy dipped a foam into the purple paint, dubbed it on the paper till most of the paint was off the foam. Essentially, he did same for orange paint and finally yellow paint as seen in Plate 4.38. Jeromy’s neatness also reflected in his art, even to the materials he used to execute his art. He picked a second sheet of paper and smeared the paint stuck in the pores of the foam an attempt to clean it up, and his resultant art was Plate 4.39.

In another session with Jeromy, the researcher welcomed him to the art room and tasked him to colour himself. His response to this instruction in Plate 4.40 was very similar to his art process in Plate 4.38 and 4.39. Except that in Plate 4.40 paints were already provided and he did not “clean” the foam because he picked smaller amounts which he spread evenly.



Plate 4.40: Jeromy “Colour yourself”

Jeromy learns from hands-on experience as proposed by Dewey. He acquires skills and strategies with help from a More Knowledgeable Other and functions in the pre-operational stage of the Piaget’s theory of cognitive development exclusive to 2 to 7-year-olds. He also developed knowledge from mental images that he formed from his views about the world. Jeromy did not evidently scribble in his art but scribbles as part of his Literacy lessons which is demonstrative of 2 to 4-year-olds according to Lowenfeld’s theory of artistic development. Jeromy has been trained in healthy toilet habits and seems to have dormant feelings for the opposite sex which is described as the latency stage of the Freud’s psychosexual development theory exclusive to 5 to 12-year-olds.

9. Griffy

Griffy’s first session was a change in routine which he noticeably reacted to. He was very uncooperative and it took him three one-on-one sessions and a group session to get used to the change in his routine for the period of his study to produce any art. He would not take any instructions from the researcher when he

came to the art room for an art session. Rather, he would cause havoc by playing with art tools and materials and sometimes end up destroying them when he senses any inhibition from the researcher.



Plate 4.41: Griffy “Free expression 1”

Finally, when Griffy settled to do any art, he still would not follow instructions or pick cues from the researcher. He would typically sit at the table rocking his legs, have his chin on the table clenching his teeth, making crackling sounds, with his arms stretched out and banging the table. This is the behaviour of children under 2 at the sensorimotor stage of Piaget’s theory of cognitive development. Griffy also needs support from adults and other external sources to develop his knowledge, skills and strategies which classifies him in the zone of More Knowledgeable Other of the Vygotsky Circle.

It was interesting to see Griffy put everything that he picked up into his mouth – a characteristic of a child at the oral stage of Freud’s psychosexual development theory reflecting an age of 0 to 1.5 years old. Also, with much training, Griffy has

developed healthy toilet habits which is characteristic of 1.5 to 3-year-old children. He is able to indicate to his teacher by holding her arm tightly and walking with her to the washroom when need be. In some other instances, Griffy was found to be very selfish and restless till he had his needs met. He would scream in a high tone and exhibit uncontrollable behaviour till he is satisfied. These are potentially, attitudes of a child functioning in their id as classified by Freud. Griffy will only stop his art when he noticed his environment was all coloured.



Plate 4.42: Griffy “Free expression 2”

Griffy in his art, was attracted to wet media such as water colour and acrylic paints, and play dough which he could manipulate. He would reach for paint on the palettes and with his hands and smear them in no particular order on the paper. Griffy choice of colours were blue, black and yellow. He would also taste the paint and smear it on his face. He was extremely playful in his art and resisted any action from the researcher to attempt to control his art process. When he played

with dough he would smell, lick, squeeze, tear, palm, bite and roll it on the table or his face as he manipulated it.

In summary, art therapy as an intervention directly addressed the untold needs and emotions of the autistic pupils in NHSS as it provided an avenue for free expression of what they could not verbally express. Art samples of the learners revealed the cognitive age ranges of the pupils making it possible for educators to design and appropriate curriculum for autistic learners.

4.3.2 Designing of art therapy intervention

As a researcher bringing intervention, the goal for each child in therapy was individualized according to the needs that arose from therapeutic assessments. The researcher considered the instructional strategies and existing therapies suitable for training autistic individuals, the autistic brain and intelligences, and the inclusion of art therapy as a form of assessment and remedy to behavioural challenges in the classroom in the designing and development of the intervention.

In this study, instructional strategies and therapies were included in the intervention because instructional strategies harness the strength(s) and particular talent(s) of autistic learner such as memorizing, artistic and visual prowess and long term memory for facts and events in the form of demonstration, PECS and individualized targeted skill development; while therapies such as SI control deficits such as sensory overloads and help learners to process sensory signals better resulting in improved learning for autistic individuals. The functioning of the autistic brain and harnessed skill sets together influence the instructional strategies suitable for teaching and training of autistic children in Numeracy and Literacy as well as the learner's learning styles.

Art is as expressive as it is therapeutic. Child art reveals the cognitive development of the child which is relevant information for developing instructions that commensurate with the learner's level. Art therapy assessment revealed the personalities of autistic learners, while art therapy directives as remedy, in the same vein gave meaning to the personality of autistic children affording them a medium of expression and communication as best as they could and this translated into controlled behaviour.

The art therapy intervention proposes that art therapy + cognitive development + appropriate instructional strategies leads to effective teaching and learning of Numeracy and Literacy for autistic children in NHSS.

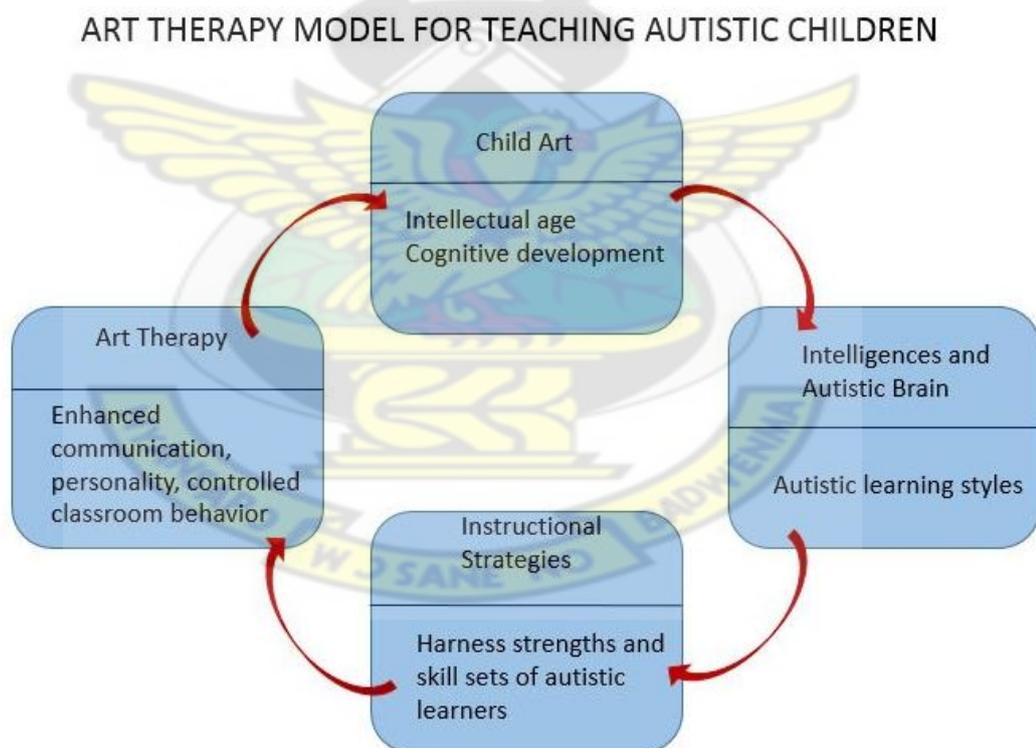


Plate 4.43: Gracevictoria's Art Therapy Model for Autism Education.

Source: Field work, 2017.

4.4 Presentation and discussion of findings for research objective three

Objective three was to pre-test and evaluate the effectiveness of the developed art therapy intervention in teaching Literacy and Numeracy at New Horizon Special School in Accra.

4.4.2 Pre-testing of developed art therapy intervention

After the Art Therapy intervention was developed, it was pre-tested during Numeracy and Literacy lessons in both autism classes in NHSS in May, 2017. The routine of the children was maintained, the researcher had a total of twenty-four one-on-one pre-testing sessions, and at least two sessions, one in Numeracy and one in Literacy with each child in the test sample depending on their attendance at school. No group therapies were carried out as Numeracy and Literacy instructions are delivered individually. The researcher was at an advantage with a relationship with each child, prior knowledge of behaviour characteristics, skills sets, cognitive development and intelligences of children during the pre-testing stage of the intervention. Familiarization sessions afforded autistic children a sense of security and the researcher the ability to observe and identify the effect of the intervention on the child.

From start to finish of Numeracy and Literacy activities the researcher in one-on-one sessions with the autistic children intermittently introduced art making as therapy as often as children exhibited their deficits. The researcher's aim for each of these sessions was to identify how the developed art therapy intervention may be used to manage autistic behaviours to facilitate their education in Literacy and Numeracy.

Jack, KayCee, Jeromy, Sherry and My Friend did not participate in the pre-testing of the intervention. Jack was absent from school on holidays, My Friend had changed school. KayCee had been moved to the vocational section of the school and was a new routine and set of activities. Jeromy and Sherry were not available during pre-testing sessions. Aidy, D-D. Leo and Griffy all had classical autism. Adowa and D-D were pupils in the senior autism class while Leo and Griffy were in the junior autism class.

The researcher discusses below the pre-testing sessions with each child and how their deficits were managed with the developed art therapy intervention.

1. Aidy

The researcher had three test sessions with Aidy, two in Numeracy and the third in Literacy. Aidy exhibits systemizing behaviours such as repetition, memorizing and categorizing information, obsession with objects, taking initiative and empathizing characteristics such as getting easily distracted, being hyperverbal and hyperactive, is dependent on routines a gets agitated when disrupted, has challenges obeying rules, gets aggressive and sometimes abusive, selfishness in her play.

In all three sessions, Aidy will first correctly change her PECS to correspond with her routine and upcoming activity without any prompt or support. After that, I sat on a chair next to her and explained to her that I will be teaching her Numeracy and Literacy for that day, Wednesday, 19th May, 2017. This was aimed at informing her of the purpose of my presence, which she understood and responded by saying, “OK” and proceeded to take her Numeracy exercise book to start working.

Aidy's task was addition of numbers 1 – 10 in a grid drawn by her teacher in her exercise book to guide her to write in the appropriate boxes. Aidy had learned and could identify the digits written by her teacher in her book and on blocks that had corresponding dots for each numbered block. For instance, block 6 had the digit "6" written on one side of a square block and 6 black dots engraved on the opposite side of the block. Aidy had the ability to correctly count these dots to help her add up numbers but will often get distracted due to visual or auditory stimuli, or her short attention spans. She will often miscount the dots resulting in wrong answers because she is not focused, and her teacher will always shout at her to help her focus on her activity.

As she worked and exhibited distractive behaviour, I will draw her attention to my presence as support for her and take her through art processes with directives such as "draw how you feel". She will literally pour out her thoughts and emotions on the paper – she will impatiently scribble with paint on her fingers in hot colours and then other colours on the paper while muttering words to herself. She attempted to destroy the tools and materials available to her and her art when she is done working.

After these interim art sessions, she will return to her activity better composed and relaxed to work. She had better concentration and was more cooperative with her teacher. Undeniably, the art making processes as a remedy helped Aidy express her emotions that were a source of distraction as she worked. Follow up talks with her mother revealed that she had not been happy from home following a change of routine at home. Apparently, Aidy waters the lawns at home every morning and that dawn it had rained so it was unnecessary for her to water the lawns. This is what she expressed in the art below.



Plate 4.44: Aidy “Art therapy in Numeracy lesson”

2. D-D

It was observed that D-D heavily relies on routines and when these are disrupted he is unable to cope with changes in routine. He enjoys music at morning assembly which is followed with more music at circle time, and he has a good idea of how long each of these sessions takes. One morning, his time at morning assembly was less than usual because he was late to school. To make matters worse, circle time was taking off the routine for the day and replaced with outdoor games. D-D unaware of the change in routine may have looking forward to circle time to enjoy more music only to be disappointed.

For him, the rest of the day was messed up and his behaviour become uncontrollable as he would initially refuse to get to the playground for outdoor games. When he finally did, everybody around the sand play stand with him had a good amount of sand in their hair, eyes, nose, mouth, clothes and ears as he would scoop large amounts of the sand in his hands throw it up in the air. Whenever his teacher reacted to this unacceptable behaviour and instructed him to stop, he will

leave the sand play stand running and screaming simultaneously across the playground.

After about an hour outdoors, D-D was back to the classroom for a Literacy activity. Transitioning from the playground to the classroom was relatively peaceful. D-D was still looking forward to music at circle time, therefore, when he got to the classroom he pulled his chair out to the front of the classroom but was reprimanded by his teacher and instructed to put his chair back at his table.

That is where D-D lost his composure again – he began to scream, rocking his head with ears covered and throw tantrums simultaneously in the class and exhibited destructive behaviour. The Education Coordinator hearing his screams came to the classroom looking very worried and enquired what was happening. Proceedings were narrated to her and she supposed that it was a change in routine that caused D-D's reactions. She decided to sing songs that teachers sing during circle time with the children to make up for the lost music, which did not make any difference.

Having observed that the teachers were getting distressed with D-D's behaviour which was disrupting the rest of the Literacy lesson, the researcher decided to help out by testing the developed intervention which would have been used during D-D's lesson. Subsequently, the researcher considered art therapy to control his behaviour, the cognitive development, interests and instructional strategies that suit D-D to teach him in the art room.

Art therapy provided an avenue for D-D to express his agitation and calm down and pay attention to his Literacy activity of copying a sentence on one p. of his exercise book. On arrival at the art room D-D sat at the table, made his choice of

medium and with silence and much focus produced a beautiful painting. His emotions were clearly settled after this therapeutic process and indeed, his behaviour for the rest of the day was better composed.



Plate 4.45: D-D “Art therapy in Literacy lesson 1”



3. Leo

Leo has attention deficits and is hyperactive. He would hardly sit at his table for any activity. This gets his class teacher worked up over having to prompt him to sit all the time and complete his tasks which results in the teacher despairing. One of his interest areas is art. He enjoys colours and activities that involve them. Legos for instance are his favourite in the classroom – he would get stuck with them all day and would throw tantrums when it is time to transition into another activity.

One morning after circle time, when pupils had settled at their desk ready for an activity in Numeracy Leo was given a task to sort two colours – green and yellow. The class teacher gave Leo changed his PECS and gave him four circle shaped laminated cards, two green and two yellow. The researcher gave him one-on-one attention for this task with the aim of ensuring that he completes the task before time run out.

From the start of the task, the researcher pinned up a sheet of paper on the front side of his cubicle and put red, green and yellow paint on a palette on his table. Leo was attracted to the paint and his first reaction was to smell and taste the paint. He was prompted not to taste the paint because it may be harmful for him.

The researcher explained to Leo that the objective of the activity was to help him identify and sort the two colours by matching them. Before the explanation could end, Leo had started fidgeting. The researcher also told him that two of the paints he sees are the same as the cards he has, and he is going to paint on the paper

when he is able to identify green and yellow. By the end of that explanation, Leo was on his feet. After the researcher prompted him severally, he sat again.

The researcher took him through a process of looking and learning in order to memorize what each colour looked like, and subsequently match them. Anytime he was able to match the coloured cards correctly, he was allowed to paint a few strokes of the colour with his finger on the paper while he is on his feet, hoping and jumping. After repeating this process, he was able to identify and match the colours successfully without any support.

The practice of painting the colour was a form of confirmation apart from the researcher reinforcing his correct identification and matching by saying, “Well done, Lee-O”. When he was successful at identifying, and sorting green and yellow, the researcher allowed him to paint at his free will and he felt rewarded for his good job.



Plate 4.47: Leo “Art therapy in Numeracy lesson”

It is worth noting that, at one point he spontaneously dipped his little finger in the red paint when he matched colours wrongly and still wanted to be on his feet to paint. When the researcher interrupted by holding his wrist and instructed him to sit, he rebelled by smearing on the cubicle and then the paper.

4. Griffy

Sensory overloads coupled with a short attention span were a source of internal conflict for Griffy during lessons. When he was at an activity and aircrafts were flying over the school or there was too much noise in his environment, he would get distracted. If the noise did not end in the shortest possible time, he would often react to the source of the noise by turning to look at his teacher. Sensory therapy was helpful for Griffy in this regard. In addition, the researcher discovered that during art therapy sessions, owing to his interest in art and sensory activities he was better concentrated at such activities and will hardly get disrupted by visual and auditory stimuli. He will often require the company or presence of an adult for prompts and to reassure him of himself.

During a scribbling session in Literacy skills, the researcher acted as an extension of his ego by being a constant presence to give him prompts and reassure him of what he was doing. For the first seven minutes after his teacher changed his PECS, gave him a sheet of paper and a crayon Griffy neither understood or followed pictogram in order to start scribbling. Based on his interest on sensory activities, the researcher gave him two colours of playdough – blue and red. Without any prompt, he playfully manipulated it in his hand continuously till it became uniform in colour – purple. There were interruptions from his immediate

environment in the classroom. Though he got distracted a few times, he did not stop his activity of playing with the dough till he was instructed to stop.

Griffy was prompted to start his scribbling activity. Again, for one reason or the other he would have to be prompted and encouraged to go on with his work and keep at it. He sometimes looked at the researcher and made some sounds, which the researcher responded to with a comment of reassurance such as “good job, Griffy”. He would continue his activity and get distracted every now and then without completing his task.

The researcher gave him another play dough to work with. This time, he was instructed to keep the play dough on his table as he scribbled. Anytime he lost focus while scribbling he will be prompted to keep working and the play dough which was his activity of interest doubled as an activity to sustain his attention while scribbling and as a positive reinforcement for obeying prompts.

Interestingly, it was observed that when Griffy lost attention while scribbling as a result of interruptions, he would pick the play dough up and manipulate it to create a form and then return to his scribbling after some time on his own. Ironically, when the researcher attempted prompting him to scribble while he was manipulating the play dough he screamed as he perceived that prompt as an interruption. Thereafter, the researcher observed him through his scribbling lesson with minimal interruptions.

The cycle of scribbling and resorting to play dough occurred till he felt he had finished scribbling and would not scribble anymore. Anytime he returned to the play dough he would destroy the previous form and create a new one. At the end of the session with Griffy he kept a smile and would play with the researcher as he

giggled. He was happy he had completed his task of scribbling while managing sensory loads and stress from interruptions while working.



Plate 4.48: Griffy “Art therapy in literacy lesson”

4.4.3 Interview with teachers about Art Therapy and its influence on autistic pupils at NHSS

After pre-testing the developed art therapy intervention, the researcher interviewed teachers to elicit their perceptions on Art therapy and the influence of the developed intervention on their pupils, if any. Kindly refer to Part IV of the interview guide (Appendix B) for details of the interview Documented below are the findings that emanated from the interview

1. Teachers knew very little about Art Therapy.
2. The school occasionally received Art Therapy project students from the US as volunteer Art Therapists.
3. Teachers acknowledged that communication and behavioural improvement occurred when Art Therapy students worked with their pupils within approximately 2 months
4. The children were more controllable with art therapy.
5. They suggested it is used in teaching autistic children in NHSS.

4.5 Challenges encountered during testing of developed art therapy intervention

1. Not all children were available
2. Not all children were diagnosed with classical autism
3. Not all the children had photography release
4. By policy photography of children is not allowed. Therefore, when visitors and volunteers were around, it was difficult to take pictures of the children.



CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the study

This study was aimed at proposing the inclusion of Art therapy as an intervention to facilitate the education of autistic children in Numeracy and Literacy skills at New Horizon Special School at Cantonments in Accra, Ghana. The objectives guiding the study were to identify and describe the characteristics of the autistic children and the existing therapies employed; to design and propose art therapy as an intervention for educating autistic children in Literacy and Numeracy and to pre-test and evaluate the effectiveness of the developed art therapy intervention in teaching Literacy and Numeracy at New Horizon Special School in Accra. The research was carried out qualitatively using the quasi-experimental, document analysis, case study, descriptive and art based assessment research methods with observation and interview as research instruments.

5.1.1 Main findings

Main findings for research objective one

The study identified varied characteristics of autistic pupils at NHSS. Both strengths and weaknesses were identified through observation and interviews. Strengths identified included repetitive behaviours, peculiar skills/interests/talents, long term memory for facts and events, uses visual information meaningfully and is relaxed at a preferred activity.

Weaknesses that emanated from the study were social, communication and cognitive deficits/delays – inability to make new friends, abstains from group

activities, is solitary, lacks speech and language, inability to follow instructions, relies heavily on signs and gestures, short attention spans, has difficulty processing symbolic information, has difficulty learning areas that are not of interest and cannot think abstractly.

The study revealed that it is possible and appropriate to harness strengths and reduce weaknesses for autistic child education. Instructional strategies and therapies such as Demonstration, PECS, SI, IEP, MDT, targeted strengths such as repetition and long term memory for facts and events were appropriate for autism child education at NHSS. In interviews, teachers mentioned that they do not employ the above-mentioned therapies in instructions for academic skill acquisition and development.

An analysis of the IEP of pupils showed improvement, stagnation and retrogression in academic skill acquisition. In an overview, these changes were determined by factors including severity of autism, attendance at school and interest in activities. Individual Educational Plans informed the researcher of the impact of the teaching styles and therapies on autistic learners.

Main findings for research objective two

To design and propose art therapy intervention, autistic pupils were taken through group and one-on-one art therapy sessions and their art samples interpreted. Findings revealed that autistic learners had an undeveloped ego, hence, the researcher served as a balance between their id and superego. They also put up defence mechanisms such as displacement as derived from the Freudian theory of psychoanalysis.

Autistic pupils in NHSS have cognitive ages between 0 and 12 years according to the Piaget's theory of cognitive development and Lowenfeld's stages of artistic development. From Vygotsky's Circle, they require support to gain knowledge because they are in the zone of MKO. Finally, the cognitive ages of autistic pupils at NHSS was well below their age in years, and this must be factored into their instructions as learners imbibe knowledge per their brain capacity.

Main findings for research objective three

At the pre-testing stage of the project, the researcher found that art therapy was a means of self-expression for autistic learners. They communicated through their art and artistically managed their emotions which led to positive emotions and enhanced learning. In group sessions, emotional and relatively unsociable pupils drew inspiration from their colleagues and opened up more by taking initiative to participate in group activities. It was found that children had increased concentration when art therapy was introduced in the routine lessons.

Pupils who have interest in art were not easily distracted by stimuli when they were engaged in art therapy. Hyperactive pupils sat for longer minutes as they were engaged by their interests and engrossed in activity. Finally, Autistic children in the test group comparatively exhibited better behaviours after the introduction of art therapy intervention during Numeracy

5.2 Conclusions

1. Art therapy inclusion in Numeracy and Literacy education had a positive impact on the behaviour of achievements of autistic pupils. Art therapy as an

intervention enhanced the coping skills of autistic children in their education in Numeracy and Literacy.

2. When art therapy is used appropriately in managing autistic children, teachers have better classroom management, and increased cooperation and output from the children
3. Art therapy among other things addresses the emotional needs of autistic children

5.3 Recommendations

1. Educators should work at minimizing the incidence of negative behaviours by understanding the characteristics of autistic children in order to avoid triggers of what may seem to be disruptive behaviour for a better managed classroom.
2. Art therapy is highly recommended for inclusion in the education of autistic individuals as it gives them an avenue for self-expression and management of emotions.
3. Due to the varying needs of autistic individuals it is necessary to have one-on-one tuition in autism school with much caution to avoid overdependence in some cases.

The researcher proposed the following for further study:

1. A comparative analysis of the severity of autistic characteristics and the academic performance of learners.
2. An analysis of teacher expertise and experience with autistic child education.
3. An investigation of teacher's interest in autistic child education and its impact on the lesson delivery and output of children.

4. A correlational analysis between psychosexual development and cognitive development of autistic individuals.

KNUST



REFERENCES

- A'Court, B. (2010). FAQ: Art Therapy UK. Retrieved March 23, 2015, from <http://art-therapy-uk.net/faq/how-art-therapeutic>
- Ahmed, S., (2009). Methods in Sample Surveys.
- American Art Therapy Association, (2013). What is Art Therapy? American Art Therapy Association, pp.1–2. Available at: <http://www.arttherapy.org>.
- Anthony, (2010). Access to education for students with autism in Ghana: implications for EFA; Background paper for the Education for all global monitoring report 2010: Reaching the marginalized; 2009.
- Armstrong, D.T., (2013). Multiple Intelligences by Dr. Thomas Armstrong. Available at: http://www.institute4learning.com/multiple_intelligences.php [Accessed April 28, 2016].
- Art Therapy, (2016). What is Art Therapy? | What Does an Art Therapist Do? Available at: <http://www.arttherapyblog.com/what-is-art-therapy/#.VyeX9PkrLIU> [Accessed May 2, 2016].
- Atieno, O.P., (2009). An analysis of the strengths and limitation of qualitative and quantitative research paradigms. Problems of Education in the 21st Century, 13, pp.13–18. Available at: http://www.scientiasocialis.lt/pec/files/pdf/Atieno_Vol.13.pdf.
- Attwood, T., (2000). Is There a Difference Between Asperger's Syndrome and High Functioning Autism? Retrieved September. Available at: http://www.sacramentoasis.com/docs/8-22-03/as_%26_hfa.pdf.
- Aussems, M.C.E., Boomsma, A. & Snijders, T.A.B., (2011). The use of quasi-experiments in the social sciences: A content analysis. Quality and Quantity, 45(1), pp.21–42.
- Autism Speaks Inc. (2014). Brain Study Finds Evidence that Autism Involves Too Many Synapses. Retrieved from Autism Speaks : <https://www.autismspeaks.org/science/science-news/brain-study-finds-evidence-autism-involves-too-many-synapses>
- Autism Speaks, (2014). What Is Autism? AutismSpeaks.org. Available at: <http://www.autismspeaks.org/what-autism>.
- Autism Speaks. (2017). Teaching Children with Autism Special Education Interventions. Retrieved from

- http://www.autismspeaks.org/community/family_services/school_kit.php
- Autism Spectrum Australia, (2016). Characteristics | Autism Spectrum. Available at: <https://www.autismspectrum.org.au/content/characteristics> [Accessed July 9, 2016].
- Autism, W.C., (2016). What Causes Autism? United Cerebral Palsy, pp.25–44. Available at: <http://www.mychildwithoutlimits.org/understand/autism/what-causes-autism/>.
- Baron-Cohen, S., (2004). The cognitive neuroscience of autism. *Journal of Neurology, Neurosurgery & Psychiatry*, 75(7), pp.945–948. Available at: <http://jnnp.bmj.com/cgi/doi/10.1136/jnnp.2003.018713> [Accessed September 10, 2016].
- Barone, T. and Eisner, E., (1997). Arts-based educational research. *Complementary methods for research in education*, 2, pp.75-116
- Barreiro, P.L. & Albandoz, J.P., 2001. Population and sample . *Sampling techniques*.
- Bhandari, S. (2005 - 2015). WebMD. Retrieved September 21, 2015, from <http://www.webmd.com/brain/autism/understanding-autism-basics>
- Bilimoria, P. (2016). Breaking into the autistic brain. Retrieved from Boston Children's Hospital: <http://www.childrenshospital.org/news-and-events/research-and-innovation-features/breaking-into-the-autistic-brain>
- Bradley, R., (n.d). Autism & Asperger Syndrome. University of Oxford. Available at: [https://www.ox.ac.uk/sites/files/oxford/field/field_document/Autism and Asperger Syndrome Fact Sheet.pdf](https://www.ox.ac.uk/sites/files/oxford/field/field_document/Autism_and_Asperger_Syndrome_Fact_Sheet.pdf) [Accessed September 13, 2016].
- Brooks, M., (2009). What Vygotsky can teach us about young children drawing. *International Art in Early Childhood*, 1(1), pp.1–13. Available at: http://www.artinearlychildhood.org/artec/images/article/ARTEC_2009_Research_Journal_1_Article_1.pdf.
- Buchalter, S. I. (2004). *A Practical Art Therapy*. London and Philadelphia: Jessica Kingsley Publishers.
- Buchanan, K., (2014). Art as Therapy vs. Art Psychotherapy by Kate Buchanan on Prezi. Prezi Inc. Available at: <https://prezi.com/6vbwi9s1dqan/art-as-therapy-vs-art-psychotherapy/> [Accessed May 3, 2016].

Chicago

Childrens Art, (2002). Available at:

<http://www.users.totalise.co.uk/~kbroom/Lectures/children.htm> [Accessed May 3, 2016a].

Christina Gallagher, (1999). Psychology History. Available at:

<http://www.muskingum.edu/~psych/psycweb/history/vygotsky.htm> [Accessed July 9, 2016].

Citizens Information Centre. (2015, February 12). Special needs Education.

Retrieved March 28, 2016, from Citizens Information: www.citizensinformation.ie

Cohen, D. & Crabtree, B., (2006). Semi-structured Interviews Recording Semi-Structured interviews. Qualitative Research Guidelines Project, p.2.

Available at: <http://www.qualres.org/HomeSemi-3629.html>.

Constantino, J.N. et al., (2003). Validation of a Brief Quantitative Measure of

Autistic Traits: Comparison of the Social Responsiveness Scale with the Autism Diagnostic Interview-Revised. *Journal of Autism and Developmental Disorders*, 33(4), pp.427–433. Available at:

<http://link.springer.com/10.1023/A:1025014929212> [Accessed July 13, 2017].

Cooke, P., (2003). Book reviews. *Planning Theory & Practice*, 4(4), pp.487–495.

Crossman, A., (2017). Participant Observation -- Definition. ThoughtCo. Available

at: <https://www.thoughtco.com/participant-observation-research-3026557> [Accessed May 11, 2017].

Daily Graphic. (2008). Educating Children with Intellectual Disability. Retrieved

March 13, 2015, from

<http://www.gfdgh.org/Educating%20Children%20with%20Intellectual%20Disability.html>

Easwaramoorthy, B.M. & Zarinpoush, F., (2006). Interviewing for research.

Emery, M.J., (2004). Art Therapy as an Intervention for Autism. *Art Therapy*, 21(3), pp.143–147.

Etikan, I., Musa, S.A. & Alkassim, R.S., (2016). Comparison of Convenience Sampling and Purposive Sampling. , 5(1), pp.1–4.

Evans, A.R. (2009), Art Therapy For High Functioning Autism How To Get Started. , p.127391.

- Evans, K. & Dubowski, J., (2001). *Art Therapy with Children on the Autistic Spectrum*.
- Evans, K., & Dubowski, J. (2001). *Art Therapy with Children on the Autistic Spectrum*. Jessica Kingsley Publishers.
<http://doi.org/10.1017/CBO9781107415324.004>
- Flinders University, (2013). Student Learning Centre. , pp.1–4.
- Fricker, R., (2012). Target Populations , Sampling Frames , and Coverage Error.
- Fussell, M., (2011). The Stages of Artistic Development. Available at:
<http://thevirtualinstructor.com/blog/the-stages-of-artistic-development>
 [Accessed May 3, 2016].
- Gardner, H. & States, U., (1999). intelligences and education. , pp.1–11.
- Gilman, L., (2001). *Human Intelligence: The Theory of Multiple Intelligences*. Available at:
<https://web.archive.org/web/20121125220607/http://www.indiana.edu/~intell/mitheory.shtml> [Accessed April 29, 2016].
- Goldberg, M.J., A New Definition of Autism. , (818). Available at:
http://www.neuroimmunedr.com/Articles/Autism___PDD/newdefinition.pdf.
- Goodreads Inc, (2016). Quote by Pablo Picasso: “Every child is an artist. The problem is how to...” Goodreads Inc. Available at:
<http://www.goodreads.com/quotes/7075-every-child-is-an-artist-the-problem-is-how-to> [Accessed May 3, 2016].
- Grandin, T. (2014), *Autism and My Sensory Based World*. Available at:
<http://www.colostate.edu/downloads/asd/tg-ppt.pdf%5Cnhttps://www.scribd.com/doc/169616628/Temple-Grandin-Autism-and-my-sensory-based-world-1-pdf>.
- Grandstaff, L., (2012). Children " s Artistic Development and the Influence of Visual Culture.
- Greenhalgh, T. & Taylor, R., 1997. What is qualitative research ? , 743, pp.740–743.
- Griffin, C. (2000) More than simple talk and text: Psychologists as cultural ethnographers. In C. Squire (Ed.), *Culture in psychology* (pp. 17 – 30). London Routledge.
- Hearst, C., (2015). How suitable is art therapy for autistic people? | Network

- Autism. Available at: <http://network.autism.org.uk/knowledge/insight-opinion/how-suitable-art-therapy-autistic-people> [Accessed July 9, 2016].
- Heflin, J. & Alaimo, D. F., (2007). *Students with Autism Spectrum Disorders: Effective Instructional Practices*. 1st ed. Pearson/Merrill Prentice Hall.
- Herskovitz, J., (2013). Five Things I Learned About Autism from My Art Therapist. GoodTherapy.org. Available at: <http://www.goodtherapy.org/blog/five-things-i-learned-about-autism-from-my-art-therapist-0828134> [Accessed July 9, 2016].
- Hurwitz, A. & Day, M., (2007). *Children and Their Art: Methods for the Elementary School*, Thomson Wadsworth.
- Hutton, A.M. & Caron, S.L., (2005). Experience of families and children with autism in rural New England. *Focus on Autism and Other Developmental Disabilities*. , pp.20, 180–190.
- John Dewey on Education: Impact & Theory, (2016). Video & Lesson Transcript | Study.com. Available at: <http://study.com/academy/lesson/john-dewey-on-education-impact-theory.html> [Accessed May 3, 2016].
- Joshi, I., Percy, M. & Brown, I., (2002). Advances in Understanding Causes of Autism and Effective Interventions. *Journal on Developmental Disabilities*, 9(2), pp.1–26. Available at: <http://www.oadd.org/publications/journal/issues/vol9no2/v9n2download/art1Joshi.pdf%5Cnhttp://www.oadd.org/index.php?p.=256>.
- Kawulich, B.B., (2005). Participant Observation as a Data Collection Method. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 6(2), pp.1–19.
- Kendra Cherry, (2016). Piaget's Stages of Cognitive Development: Four Stages. Available at: <https://www.verywell.com/piagets-stages-of-cognitive-development-2795457> [Accessed September 6, 2016].
- Knight, G.P., Roosa, M.W. & Umaña-Taylor, A.J., (2009). Sampling, recruiting, and retaining diverse samples. *Studying ethnic minority and economically disadvantaged populations: Methodological challenges and best practices.*, pp.29–78. Available at: <http://proxy.lib.sfu.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2009-08147-002&site=ehost-live>.
- Knupfer, N.N. & McLellan, H., (1996). *Descriptive Research Methodologies*.

Handbook of Research for Educational Communications and Technology, pp.1196–1212.

Kramer, E. (1993). *Art as Therapy with Children*. Chicago, Illinois: Mangolia Street Publishers.

Krejcie, R. V & Morgan, D.W., (1970). Determining Sample Size For Research Activities. Available at:
https://home.kku.ac.th/sompong/guest_speaker/KrejcieandMorgan_article.pdf [Accessed July 12, 2017].

Krug, D.A., Arick, J. & Almond, P., (1980). Behaviour checklist for identifying severely handicapped individuals with high levels of autistic behaviour. *Journal of child psychology and psychiatry, and allied disciplines*, 21(3), pp.221–9. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/7430288> [Accessed July 13, 2017].

Landrigan, P.J., (2010). What causes autism? Exploring the environmental contribution. *Current opinion in pediatrics*, 22(2), pp.219–225.

Leekam, S., (2016). Social cognitive impairment and autism: what are we trying to explain? *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, 371(1686), p.20150082. Available at: <http://rstb.royalsocietypublishing.org/lookup/doi/10.1098/rstb.2015.0082%5Cnhttp://www.ncbi.nlm.nih.gov/pubmed/26644600>.

Long, C., Gurka, M. J. & Blackman, J., (2011). Cognitive Skills of Young Children with and without Autism Spectrum Disorder Using the BSID-III. *Autism Research and Treatment*, 2011, pp.1–7. Available at: <http://www.hindawi.com/journals/aurt/2011/759289/> [Accessed September 10, 2016].

Lord, C. et al., (2000). The autism diagnostic observation schedule-generic: a standard measure of social and communication deficits associated with the spectrum of autism. *Journal of autism and developmental disorders*, 30(3), pp.205–23. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/11055457> [Accessed July 13, 2017].

Lowenfeld, V., & Brittain, W. L. (1987). *Creative and Mental Growth* (8th ed.). Macmillan.

- Lucie Bauer, Gudni Olgeirsson, Filomena Pereira, Christine Pluhar, Phil Snell. (2003). *Key Principles for Special Needs Education, Recommendations for Policy Makers*. Odense, Odense, Denmark.
- Mack, N., Woodsong, C., McQueen, K. M., Guest, G., Namey, E., (2011). *Qualitative Research Methods: A data collector's field guide*, Available at: [https://www.fhi360.org/sites/default/files/media/documents/Qualitative Research Methods - A Data Collector's Field Guide.pdf](https://www.fhi360.org/sites/default/files/media/documents/Qualitative%20Research%20Methods%20-%20A%20Data%20Collector's%20Field%20Guide.pdf).
- Mahgoub, Y.M., (2015). *The Importance of the Development of Art Education Curriculum in the Sudanese* Yassir M Mahgoub Department of Art Education University of Khartoum. , 5(8), pp.99–104.
- Malchiodi, C. A. (2007). *The Art Therapy Sourcebook*. United States of America: McGraw Hill Companies.
- McClain, B. & Madrigal, D., (2012). *Strengths and Weaknesses of Quantitative and Qualitative Research :: UXmatters*. UXmatters. Available at: <http://www.uxmatters.com/mt/archives/2012/09/strengths-and-weaknesses-of-quantitative-and-qualitative-research.php> [Accessed April 19, 2017].
- McGinnity, K., (2010). *Checklist, Interview, and Observation Form for Educational Identification of Autism Based on the Wisconsin DPI Statewide Criteria*. , 35(2), pp.1–10.
- McLeod, S. (2013). *Sigmund Freud*. Retrieved from *Simply Psychology*: www.simplypsychology.org/Sigmund-Freud.html
- McLeod, S., (2014). *Vygotsky | Simply Psychology*. *SimplyPsychology*. Available at: <http://www.simplypsychology.org/vygotsky.html> [Accessed July 9, 2016].
- McLeod, S., (2015). *Jean Piaget | Cognitive Theory | Simply Psychology*. Available at: <http://www.simplypsychology.org/piaget.html> [Accessed July 9, 2016].
- Merriam, S.B., (1998). *merriam.pdf*.
- Mills, A.J., Durepos, G. & Wiebe, E., (2012). *Non-Participant Observation*. SAGE Publications. Available at: <http://srmo.sagepub.com/view/encyc-of-case-study-research/n229.xml> [Accessed May 11, 2017].
- Ministry of Education. (2013). *Inclusive Educational Policy*.

- Moffitt, S. (2011, May 12). Art Therapy for Autism. Retrieved from Autism Key: <http://www.autismkey.com/art-therapy-for-autism/>
- Multiple Intelligence (MI) – Howard Gardner. (n.d). Available at: http://web.cortland.edu/andersmd/learning/MI_Theory.htm [Accessed April 29, 2016b].
- Naumburg, M., (2004). What is Art Therapy? , pp.1–17.
- New Horizon Special School. (2005). About Us: New Horizon Special School. Retrieved March 23, 2015, from <http://www.newhorizon-school-gh.com/about.html>
- Newschaffer, C.J., Falb, M.D. & Gurney, J.G., (2005). National autism prevalence trends from United States special education data. *Pediatrics*, 115(3), pp.e277-82. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/15741352> [Accessed July 19, 2016].
- Non-participant observation, (2016). Encyclopedia.com. Available at: <http://www.encyclopedia.com/social-sciences/dictionaries-thesauruses-pictures-and-press-releases/non-participant-observation> [Accessed May 12, 2017].
- O'Callaghan, F. (2002). Autism—what is it and where does it come from? Retrieved from Oxford University Press Journals: <http://qjmed.oxfordjournals.org/content/95/5/263>
- Oxford University Press. (2015). Oxford Journals - Human Molecular Genetics. Retrieved September 20, 2015, from http://hmg.oxfordjournals.org/content/15/suppl_2/R138.short
- Palys, T., (2008). Purposive sampling. In L. M. Given (Ed.). , 2.
- Pellicano, E., (2010). The Development of Core Cognitive Skills in Autism: A 3-Year Prospective Study. *Child Development*, 81(5), pp.1400–1416. Available at: <http://doi.wiley.com/10.1111/j.1467-8624.2010.01481.x> [Accessed September 10, 2016].
- Piaget, J., (1920). Piaget ' s Theory Piaget ' s Assumptions About Children Nature vs . Nurture Continuous vs . Discontinuous. *Children*, pp.1–13.
- Piaget, J., (1972). *The Psychology of Intelligence*, Totowa, NJ: Littlefield.
- Raja, M., Azzoni, A. & Frustaci, A., (2011). Autism spectrum disorders. *Clinical practice and epidemiology in mental health CP EMH*, 7(4), pp.97–105. Available at:

<http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2931781&tool=pmcentrez&rendertype=abstract>.

- Randi, J., Newman, T. & Grigorenko, E.L., (2010). Teaching children with autism to read for meaning: challenges and possibilities. *Journal of autism and developmental disorders*, 40(7), pp.890–902. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/20101452> [Accessed July 12, 2017].
- Ratajczak, H. V., (2011). Theoretical aspects of autism: Causes—A review. *Journal of Immunotoxicology*, 8(1), pp.68–79. Available at: <http://www.tandfonline.com/doi/full/10.3109/1547691X.2010.545086>.
- Reads, C. & Profile, C.S.E.E., (2016). The Advantages and Disadvantages of Using Qualitative and Quantitative Approaches and Methods in Language ... Assessment ” Research : A Literature Review. , (November).
- Reevy, G. M., Ozer, Y. M., & Ito, Y. (2010). *Encyclopedia of emotion*. ABC-CLIO.
- Research design , research method and population. , 2001. pp.84–99.
- Rocky Point Academy, 2009. List of autism characteristics. Davis Autism Approach. Available at: <http://calgaryautism.com/characteristics.htm> [Accessed July 9, 2016].
- Roemmele, B. (2015). Slate. Retrieved September 21, 2015, from http://www.slate.com/blogs/quora/2013/05/06/does_it_really_take_21_days_to_break_a_habit.html
- Rudy, L. J. (2016). Art Therapy for Autism. Retrieved from About.com: <http://autism.about.com/od/autismtherapy101/a/arttherapy.htm>
- Salaria, N., (2012). Meaning of the Term- Descriptive Survey Research Method. *International Journal of Transformation in Business Management*, 1(6), pp.1–7.
- Silveira, J., (2007). Howard Gardner ’ s Theory of Multiple Intelligences : Implications for Music Education. , pp.1–4.
- Silverman D., (2010). *Doing Qualitative Research (Third Edition)*, Sage Publications Ltd, London.
- Social Development Theory (Vygotsky), (2016). Learning-Theories.com. Available at: <https://www.learning-theories.com/vygotskys-social-learning-theory.html> [Accessed July 9, 2016].
- Sonia Mehta, (2002). *Multiple Intelligences and how Children Learn: An*

Investigation in one Preschool Classroom.

- Spinks, N. & Canhoto, A.I., (2015). Case study research design. , pp.1–11.
- Starman, A.B., (2013). Adrijana Biba Starman The case study as a type of qualitative research. , pp.28–43.
- Steinfeld, L., (2008). Autism and Education: A Comparison of Practices and Suggestions for Adaptation. Available at: http://scholarworks.gsu.edu/art_design_theses/30/.
- Stone, W.L. & Turner, L., (2005). The Impact of Autism on Child Development. Available at: <http://www.child-encyclopedia.com/autism/according-experts/impact-autism-child-development> [Accessed July 9, 2016].
- Strauss, V., (2013). Howard Gardner: “Multiple intelligences” are not “learning styles” - The Washington Post. Available at: <https://www.washingtonpost.com/news/answer-sheet/wp/2013/10/16/howard-gardner-multiple-intelligences-are-not-learning-styles/> [Accessed April 29, 2016].
- Student Voice, (2010). Assessment Methods - Document Analysis. Student Voice. Available at: <https://www.studentvoice.com/app/wiki/>.
- Syndrome, A., (2014). Checklist for Autism Spectrum Disorder as an In-class Observation Tool for Teachers. , 8(5), pp.1482–1485.
- The National Autistic Society. (2016). Myths, facts and statistics. Retrieved from The National Autistic Society: <http://www.autism.org.uk/About/What-is/Myths-facts-stats>
- Twigg, D. & Garvis, S., (2010). Exploring Art in Early Childhood Education. , 5(2).
- Ullmann, P. (2011). Art Therapy and Children with Autism: Gaining Access to Their World through Creativity. . Retrieved March 12, 2015, from <http://www.arttherapy.org/autismtoolkit/ullmann.pdf>
- University of Cambridge . (2016). The autistic brain . Retrieved from Cambridge Neuroscience : <http://www.neuroscience.cam.ac.uk/research/cameos/AutisticBrain.php>
- Vivanti, G. et al., (2013). Intellectual Development in Autism Spectrum Disorders: New Insights from Longitudinal Studies. *Frontiers in Human Neuroscience*, 7(July), p.354. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3701858&tool>

=pmcentrez&rendertype=abstract.

- Waller, D., (2006). *Art Therapy for Children: How It Leads to Change*. SAGE Publications. Available at:
<https://www.rafaelstichting.nl/queeste/files/2012/11/art-therapy-children1.pdf> [Accessed May 3, 2016].
- WebMD, (2016). *Asperger's Syndrome Symptoms in Children, Teens, Adults*. WebMD, LLC. Available at:
<http://www.webmd.com/brain/autism/tc/aspergers-syndrome-symptoms#1> [Accessed July 9, 2016].
- Williams, C., (2007). *Research Methods*, 5(3), pp.65–72.
- Witt, N., (2012). *Art Therapy and Autism*. *Journal of Chemical Information and Modeling*, 53(4798), p.160.
- Yasnitsky, A., (2011). *Vygotsky Circle as a Personal Network of Scholars: Restoring Connections Between People and Ideas*. *Integrative Psychological and Behavioural Science*, 45(4), pp.422–457. Available at:
<http://link.springer.com/10.1007/s12124-011-9168-5> [Accessed September 7, 2016].
- Yin, R.K., (2004). *Complementary Methods for Research in Education*.
- Yount, D.R., (2006). *Populations and Sampling*, pp.1–10.
- Zainal, Z., (2007). *Case study as a research method*.
- Zohrabi, M., (2013). *Mixed Method Research: Instruments, Validity, Reliability and Reporting Findings*. *Theory and Practice in Language Studies*, 3(2), pp.254–262. Available at:
<http://ojs.academypublisher.com/index.php/tpls/article/view/9031>.

APPENDICES

APPENDIX A

PARTICIPANT CONSENT FORM

Invitation to participate in Art therapy for Autism study

Topic: ART THERAPY IN SPECIAL NEEDS EDUCATION: A CASE OF AUTISM IN SELECTED SCHOOLS IN ACCRA

You are being invited to participate in a study, and on behalf of your child/ward to assist the researcher elicit necessary data for this study.

The purpose of this study is to enhance the communication, social and intellectual coping skills of autistic children at New Horizon Special School (NHSS) to facilitate their learning process through the intervention of Art Therapy in their education.

The study will be carried out in one-on-one and group sessions at NHSS between 2:00pm and 4:30pm on Mondays, Tuesdays, Thursdays and Fridays between October and December, 2016. Your child will participate in art making processes during art therapy sessions while you will complete a questionnaire of your child's current skill sets, strengths and weaknesses, and progress with art therapy as an intervention later in the study.

The researcher seeks to document art making process and artworks of your child/ward through photographs with your permission. Participants are assured that the faces of their child/ward will not appear as photographs will focus on their art and will be captured from the rear.

All information provided during this study remains confidential and private to the study. If you agree to the conditions of this study and desire that you and your ward participate in this study, kindly fill out this form with the particulars requested below and return the document to the administration of NHSS.

The researcher can neither guarantee that this study will or otherwise benefit you or your ward explicitly or implicitly. Participants should kindly note that this is a quasi-experimental research in which you and your child/ward may be part of either the sample group or control group.

Please find the schedule for art therapy sessions of sampled children attached for your perusal.

For further detail kindly contact the researcher of this study at NHSS.

Thank you.

My signature below indicates that I have read and understood the content of this form and have all my concerns addressed prior to the study.

I agree that my child/ward
..... should participate
in this study.

.....

(Your signature)

.....

(Researcher's signature)

.....

(Your name)

.....

(Researcher's name)

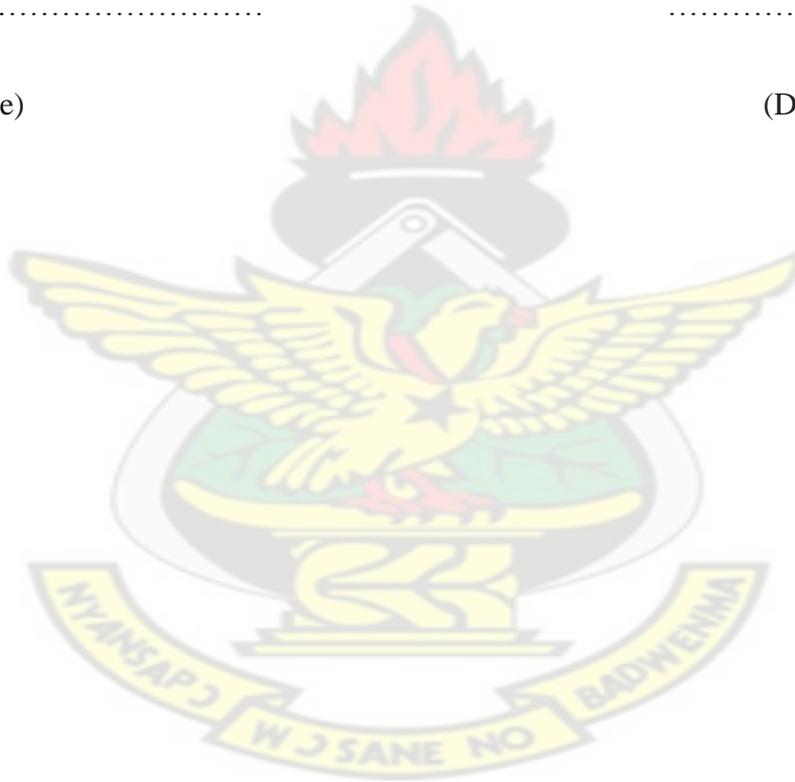
KNUST

.....

(Date)

.....

(Date)



7. Did you know about autism before your employment at NHSS? To what extent if so?
8. Are you interested in autistic child education? Did you have interest in autistic child education at all before your employment at NHSS or you have developed interest as a result of working at NHSS?
9. Did you have autistic child education training before your employment at NHSS? If not, what is your background?
10. Have you had any autistic in-service training? Where and how often?
11. Do you have knowledge of any therapies that can be used in teaching Numeracy and Literacy?
12. Do you use any therapies in teaching Numeracy and Literacy?

PART III: PUPIL'S INFORMATION

1. How old is this child/pupil?
2. Is this child autistic? What characteristics does he/she exhibits? How severe are the characteristics he/she exhibits?
3. What instructional strategies do you use for autistic children in NHSS? Kindly describe them.
4. What therapies do you employ in teaching Numeracy and Literacy?
5. How helpful has your instructional strategy been? What are the advantages and disadvantages you have encountered with using this instructional strategy? (do the same for therapy)
6. What was the intellectual performance and behaviour of the child when he/she enrolled as a student? Kindly describe in detail
7. Did he/she have any form of intervention or therapy before coming to NHSS? Kindly specify.

8. Does NHSS employ any therapies along with instructional strategies in the education of autistic children? What therapies are currently employed in NHSS?
9. Which of therapies does he/she engage in?
10. How often does he/she partake in the therapies?
11. What systems do you have in place as an autism coach in NHSS to assess and monitor the progress of your students?
12. How long has this child been a student of NHSS? Do you observe any improvement in the behaviour and intellectual performance of this child with current instructional strategy and therapy?

PART III: TEACHERS' PERCEPTION ON ART THERAPY INTERVENTION

1. Have you heard about Art Therapy before? What is it and how much do you know about it?
2. Have you been involved in Art therapy in any way before? If yes, what were your impressions?
3. Have you observed any improvement in your pupils during the pre-testing of the developed art therapy model during Numeracy and Literacy lessons? If yes, kindly specify or describe in detail your observations.

APPENDIX C

OBSERVATION CHECKLIST FOR AUTISM PUPILS ON ART THERAPY IN SPECIAL NEEDS EDUCATION: A CASE OF AUTISM IN NEW HORIZON SPECIAL SCHOOL

Research Objective 1: To identify and describe the characteristics of the autistic children and the existing therapies employed in teaching Numeracy and Literacy at New Horizon Special School in Accra.

“0” – Never

“1” – Sometimes

“2” – Always

I. Empathizing behaviour (weaknesses)

Socialization

Child behaviour	0	1	2
1. Child is withdrawn, solitary, talks to self, has monologues and does not notice people listening			
2. Avoids social interactions			
3. Is nervous around people and has greater interest in objects			
4. Difficulty with initiation			
5. Short attention spans			
6. Enjoys shared activities			
7. Has reciprocal interactions			

8. Interactions are selfish and inconsiderate			
9. Difficulty mixing with peers, making and maintaining friends			
10. Play is unimaginative and repetitive			
11. Easily gets distracted by visual and auditory stimuli			
12. Rule and routine bound			
13. Needs excessive reassurance especially if routine is altered			
14. Lacks intuition			
15. Does not compete in sports, games, activities			
16. Treats strangers and familiar people alike			
17. Lack of appreciation of danger			
18. Indifferent to peer pressure			
19. Has difficulty learning			

Source (McGinnity 2010)

Communication

Child behaviour	0	1	2
1. Lacks anticipatory response			

2. Uses offensive language			
3. Delays in pragmatics of language			
4. Delays in use of non-verbal language, body language			
5. Has a peculiar gaze and inappropriate facial expressions			
6. Is found wanting when unsuccessful with verbal language			
7. Difficulty in using spontaneous language			
8. Uses a loud unmodulated voice			
9. Non-logical use or absence of pronouns and pronoun reversals			
10. Is hyper verbal			
11. Is unresponsive or does not take turns in communication process			
12. Has little or no language and relies on gestures, signs and tantrums to get this done			
13. Does not initiate conversations			
14. Difficulty in disengaging thoughts from language, says things as it is in mind			
15. Very literal in conversations making topically related responses that is not accurate to the			

conversation			
--------------	--	--	--

Source (McGinnity 2010)

Imagination of other's minds

Child behaviour	0	1	2
1. Has difficulty understanding other's perspectives			
2. Has difficulty understanding the emotions of others			

II. Systemizing behaviour (strengths)

Repetitive behaviour

Child behaviour	0	1	2
1. Repetition of words or phrases in same or familiar context (McGinnity 2010)			
2. Does not get distressed at an activity he enjoys			
3. Is at advantage with actions that require strict rules			
4. Is able to sustain interests when motivated			
5. Is logical/consistent			

Islets of ability

Child behaviour	0	1	2
1. Understands concepts with concrete facts			
2. Has long term memory for concepts, facts and events in large portions			
3. Has a particular talent/skill			
4. Exhibits advanced skill development in some areas (McGinnity 2010)			
5. Gets fascinated about a particular topic			
6. Has a strong sense for detail/ gives extra attention to detail			
7. Uses visual information meaningfully			
8. Have little concern what others think of them			
9. Is frank/candid/straightforward			

Obsession with systems

Child behaviour	0	1	2
1. Has prolonged attachment to a specific technical ability			
2. Copes with indecision and is productive with routines			
3. Is relaxed and happy when engaged in preferred			

skill			
4. Remains focused and not easily distracted at preferred skill			

III. Cognition

Child behaviour	0	1	2
1. Has difficulty processing information			
2. Has great difficulty with abstract thinking			
3. Has difficulty identifying relevant cues			
4. Gets stuck thinking about one thing over and over again			
5. Narrow range of interests			
6. Difficulty processing symbolic information			
7. Difficulty learning areas that are not of interest			

Source (McGinnity 2010)

IV. Sensory

Child behaviour	0	1	2
1. More or less sensitive than typical peers			
2. Has unusual sleep patterns			

3. Extremely passive or hyper			
4. Handles objects in an unusual way			
5. Has a firm grip on objects			
6. Has need for tight hugs, soft touch, deep pressure			
7. Visual	Prolonged regard for/stares at objects		
	Poor/no eye contact		
	Use of peripheral vision		
	Attention to illumination		
8. Auditory	Attention to self-induced sound		
	Non-responsive/overreaction to noise of varying levels		
9. Gustatory	Repetitive sniffing of objects		
	Specific food preferences or aversions		
	Pica-eating inedible objects		
	Difficulty swallowing not as a result of physical problem		
10. Tactile	Over/under responsive to pain,		

	touch and temperature			
	Prolonged rubbing of surfaces			
	Refuses to keep shoes on			
	Avoids walking on grass with bare feet			
11. Vestibular	Over/under responsive to gravity, whirling, spinning, bumping into things			
	Need to push or lift heavy objects			
12. Combination of sensory inputs	Unable to look at while listening to someone			
	Cannot sing at the same time others are singing			
	Unable to follow instructions while listening to someone			

Source (McGinnity 2010)

V. Development and challenging behaviour

Child behaviour	0	1	2
1. Discontinuity in development			

2. Uneven profile of skills			
3. Other skill sets are undeveloped			
4. Does not follow normal pattern of development			
5. Regressive in motor, sensory and learning skills			
6. Highly dependent on routine			
7. Becomes distressed with changes in routine			
8. Is self-abusive and aggressive			
9. Emotional spontaneity - mood swings, tantrums, inappropriate fears, crying, giggling for no apparent reason			
10. Has difficulty transitioning between materials, people, environment or activities			

Source (McGinnity 2010)

APPENDIX D

PROFILE OF THE SCHOOL

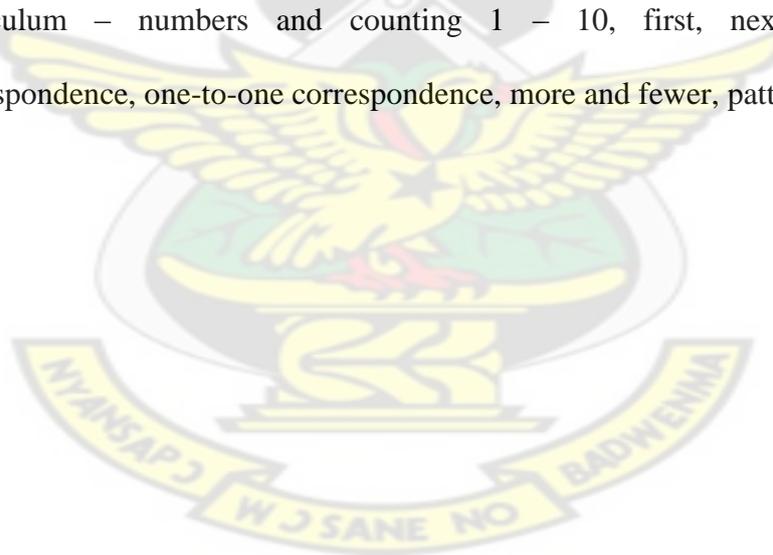
The New Horizon Special School is a purpose-built establishment started by a mother, Mrs. Salome Francois, who has a daughter with a disability, Helen, and supported by friends from American Women Association and two mothers on 10th January, 1972 with 3 students. The school was registered with Ghana Education Service in 1973 and has been legally registered as a voluntary non-profit making and charitable institution in Ghana in 1972. The school has also been registered as non-governmental organization (N.G.O.) with the Department of Social Welfare in 1997. The school does not receive Government grants but depends on fundraising activities, and donations from individuals and organizations.

The school believes that every child, whether handicapped or not has the right to develop to the limits of his or her capabilities. The school provides Basic Day School Education for children and Vocational Training and Employment for adults who have intellectual Disabilities such as Autism, Cerebral Palsy, and the Visually impaired and Hearing impaired. The school which started on Mrs. Francois' verandah, built and now owns its own premise at Cantonment in Accra with fundraising. The school now has about 120 children and adult "pupils" from 4 to over 50 years at both academic and vocational sections, with teachers, 2 secretaries, a Principal and Education Coordinator. The academic section has pupils aged 4 to 17, while the vocational section and workshop have pupils 17 and above.

Mrs. Francois took the challenge of Helen's predicament with stoic determination and put together the necessary elements which eventually resulted in the New Horizon School we see today. Mrs. Francois decided to dial back her activities as Principal, Fund-Raiser and Executive Director without a salary at the school for

personal reasons. For this reason, funds were raised by the NHSS Board and Vanessa Adu-Akorsah was hired as the new Principal who has brought freshness to the school for the past 5 years. The school is managed by an Executive Director, a principal, two vice principals and controlled by a Board of Trustees.

The NHSS uses the pre-school curriculum of the GES to equip children in basic literacy and numeracy skills. The content of this curriculum covers basic concepts and skills, shapes, sizes, opposites, go-togethers, same and different. It includes writing readiness – left to right, top to bottom, slanted lines, curved lines, forward circles, backward circles, top-to-bottom lines, circles. Reading readiness encompassing letters and letter sounds, rhyming pictures and beginning sounds are contained in the curriculum. Mathematics readiness is not left out in this curriculum – numbers and counting 1 – 10, first, next, last, ordinal correspondence, one-to-one correspondence, more and fewer, patterns.



APPENDIX E

INDIVIDUAL EDUCATION PLAN (IEP) FOR AUTISTIC LEARNERS IN TEST SAMPLE

1. Aidy

- **Psychological report**

Aidy was diagnosed with classical autism at the age of 3 by a psychologist and was confirmed as such with learning disabilities by a clinical psychologist from the 37 Military Hospital of Ghana.

- **Annual goals**

Annual goals set for Aidy between 2011 and 2016 were to learn the value of our currencies and use them to buy, participate in dictation to facilitate the memory storage of new words, learn to do simple subtraction from 1 – 5 with help. It is worth noting that, Aidy had attended three regular schools and one special school all in Ghana before she enrolled in NHSS in 2011. Aidy attends school regularly.

Aidy was promoted to a higher class in May, 2017 when school reopened from Easter break. This class trains children with learning deficits and not particularly autistic learner. The class teacher here says that Aidy's performance has reduced even further and confirms that she is the only autistic child there. The researcher did not observe that class so cannot say much about instructional strategies and therapies there and how they suit autistic children. Nevertheless, a change of environment could result in such drastic outcomes as is seen in Aidy now.

- **Communication**

Aidy expressed herself verbally but with limited vocabulary. Hence, cannot engage in a comprehensive conversation. She speaks in a loud unmodulated voice, understands what people say and answers simple questions by using keywords to communicate. Aidy benefits from the repetition of clear, simple speech. She helps the teacher on duty at morning assemblies to lead the school in prayers and worship.

An analysis of Aidy's communication between 2011 and 2016 showed her communication skills had declined as she had become less verbal and will not ask for permission before going out to use the washroom by 2013. In 2014, she relied on classroom rules to ask permission from her teacher to use the washroom but in 2015 and 2016 she worsened as she will not communicate with any adult but simply walk out of the classroom at her will.

- **Academic skills**

Pre-math

Aidy shows retrogression in Numeracy in IEP analysis. In 2011, Aidy enjoyed counting, and did so sequentially up to 20. In 2013, she could identify and sort 2 dimensional objects and do addition of two digits from 1 to 10 e.g. $2+4$ and was introduced to subtraction in 2014. By 2015, she could identify most shapes, sort out objects of different colours, shapes and sizes, and was still learning to subtract. Unfortunately, in 2016, she was able to identify and sort objects but now counts with much assistance. Hence, she is unable to add or subtract sums like she was between 2013 and 2015.

Pre-writing

Aidy could write her own name boldly though she required supervision to complete writing it when she enrolled in NHSS. She wrote all the alphabets of the English Language chronologically in small letters in 2011. In 2013, she could copy the date from the picture identification board and enjoyed drawing and colouring. Through 2015 to 2016, Aidy could write the alphabets in capitals, fill gaps with missing letters to complete two letter words, and fix animal and object puzzles on her own in addition to skill sets of 2011 to 2013. In pre-writing skills, Aidy showed steady progress.

Pre-reading

An analysis of Aidy's IEP report showed a growing proficiency in her reading skills. In 2011 she could recite the alphabets very well and sound them out. By 2013, she could pronounce two-letter words on her own and three-letter words with much assistance. In 2014, Aidy could read short sentences with assistance, spell long words like "telephone" and "umbrella" and memorize them for dictation. She knows the date and can read the days of the weeks.

- **Social/emotional**

Aidy has shown no behavioural changes socially/emotionally. From 2011 to 2016, she greets familiar adults with a handshake, does not like to be restricted when she is done with an activity, she shows aggression towards others when she is moody. She also responds to adults' facial expressions, tone of voice and body language to refrain from wrong behaviour. Her behaviour in the classroom is guided by rules.

2. Jack

Jack had attended two schools previously – Priory School and Bensham Mhndr both in London in September 1990 and March 1985 respectively. He was born in May, 1978.

- **Psychological report**

None

- **Annual goals**

Jack will learn to identify 1-5 and recognize them. He will match objects 1-3 without help. He will learn to read two letter words and join 2 alphabets to make meaningful words. He will learn to be sociable with volunteers and individuals who enter the classroom.

- **Communication**

In 2001, Jack spoke only English. No changes were identified in Jack's communication and speech between 2011 and 2016. He is able to communicate verbally in English, and sometimes Ga and Twi. He is also a very good listener who can retell stories read to him.

- **Academic skills**

Pre-math

In 1998 Jack, could count 1 – 20 with little help, he could identify 1 – 10 and write 1 – 6 on his own. In 2001, Jack could write 1 – 7 on his own. In 2002, he could also recognize 1 – 5. Jack improved from counting by rote 1 – 20 and tracing 1 – 10 with assistance in 2011 to sorting out different shapes and objects on his own in 2015 and 2016.

Pre-writing

In 2011, Jack could write his first name on his own and copy his surname. This he has maintained till date.

Pre-reading

None

- **Social/emotional**

In 1998 Jack, would not listen to direction unless he is forced to do so and reported pupils who were noisy in class to his teacher. Jack socializes with only familiar peers and adults and likes to dance in 2001. He greets and admires nice things around him and also says “thank you” to show appreciation between 2001 and 2011. From 2013 to 2016, he spoke frankly against what he disliked and felt bad if a close friend offended him.

3. D-D

D-D attended the Bergenfield Public School in New Jersey, USA where he had received training before he enrolled in NHSS. He has an IEP for only 2016 in his folder from which details were taken for identification of new behaviours during the pre-testing of the developed intervention

- **Psychological report**

Autistic

- **Annual goals**

He will do subtraction with help. He will do 3-digit addition with help.

- **Communication**

He is verbal with limited speech. He reads and understands written questions and answers them accordingly. He has no difficulty processing information. He answers simple personal questions. He recites the part of the body. He understands pictograms and exchanges them accordingly.

- **Academic skills**

Pre-math

D-D identifies and sorts most shapes, he sorts objects in different shapes, colours and sizes, he adds two digits on his own and counts accurately and independently.

Pre-writing

He enjoys writing and does so neatly. He fills in gaps with missing letters and identifies and writes all the letters of the alphabet on his own. He fixes animal and object puzzles.

Pre-reading

D-D reads short sentences on his own. He is familiar with particular words and reads them when he comes across them.

- **Social/emotional**

D-D is friendly and familiar with both peers and adults, and shares what he has with others. He patiently waits for his turn and feels good when his work has been marked.

4. KayCee

No analysis could be done for KayCee as he had just 2016's IEP in his folder. Therefore, data was still collected to assist the researcher to identify any changes in his behaviour during the testing of the intervention.

- **Psychological report**

Autistic

- **Annual goals**

KayCee will learn to do simple addition with help and write his surname correctly. He will be encouraged to engage in conversations and will be read to in order to improve his speech and vocabulary. He will be taken out to places of interest like the national theatre and the Accra mall to help him become more sociable.

- **Communication**

KayCee has little expressive language but hardly speaks unless he is prompted to. He answers simple questions about himself. He sings at assembly and circle time. He is able to sing the days of the week, National pledge of Ghana and classroom rules.

- **Academic skills**

Pre-math

KayCee can identify and write 1 to 10, counts and matches objects independently.

He can fix 10 pieces of puzzle independently.

Pre-writing

None

Pre-reading

KayCee can match letters to pictures “A” to “Z” alphabetically, and match his picture to his name independently.

- **Social/emotional**

He likes to touch others and gently hits adults to get attention. He likes to be praised by a rub on his head for doing something good. Occasionally, he claps his hands for himself when he says the date correctly. He becomes moody and resistant when he is offended.

5. Leo

- **Psychological report**

Leo’s psychological report concluded that he is on the ASD with mild to moderate severity and hyperactivity by a Physician and clinical psychologist at the 37 Military Hospital, Accra, Ghana in 2015

- **Annual goals**

By the end of 2016, Leo was expected to listen to more stories and do more picture reading on his own to enable him develop interest in storytelling. He will colour within boundaries within hand over hand assistance. He will sort two colours out independently. He will request for objects by pointing to what he needs. He will be able to tolerate children during play

- **Attention Span**

In 2015 when Leo enrolled in NHSS he had difficulty concentrating on an activity and had tasks never completed. By 2016, he could sit down and partake in class activities such as circle time, puzzles, Legos, play dough, scribbling and painting. The researcher observed that these are activities that interests him, hence, his undivided attention at these tasks. However, therapies and instructional strategies have helped Leo focus more on tasks in a year.

- **Communication**

In addition to his ability to follow close point and distance points consistently in 2015, Leo could indicate his needs by pointing and follows simple instruction in 2016. Therefore, instructional therapies such as demonstration had helped Leo acquire a new skill in communication.

- **Academic skills**

Pre-math

Leo has shown improvement in pre-math skills with the instructional strategies and therapies available to him at NHSS. Between 2015 and 2016, he was able to

match shapes without assistance. He sorts colours with much support from his class teacher.

Pre-writing

However, Leo's IEP analysis showed no change in pre-writing skills as he chooses his own colour and scribbles in the same manner from 2015 to 2016.

Pre-reading

In 2015, Leo could turn p.s of a book on his own and point to pictures. He also enjoyed listening to stories. He still does same in 2016 according to his IEP. This suggests that Leo has acquired no evident new pre-reading skills with the existing instructional strategies and therapies in NHSS.

- **Social/emotional**

Leo's social/emotional behaviour has worsened over 2 years. In 2015, he showed sudden, strong emotions when he did not get things done his way or when things did not happen as he expected. In addition to this behaviour, in 2016, he showed aggressive behaviour under same circumstances.

6. My Friend

- **Psychological report**

The results of a psychological report conducted in 2014 by a Senior clinical psychologist at the 37 Military Hospital in Accra, Ghana indicates that My Friend is vaguely autistic with high ADHD tendencies.

- **Annual goals**

Listen to more stories and do more picture reading to enable her speak well. She will colour in boundaries, and sort two colours independently. Obey simple instructions and understand verbal prompts. She will react appropriately to adults after being restricted.

- **Attention spans**

The researcher is unable to ascertain any changes in the attention span of My Friend. In 2015, she could not focus on an activity, neither could she divide her attention between two activities. Unfortunately, there is no IEP report for My Friend's attention span in 2016.

- **Communication**

My Friend exhibited no changes in communication between 2015 and 2016. She has a few vocabularies but cannot construct sentences, she follows simple instructions, and uses gestures and verbal cues to communicate her needs.

- **Academic skills**

Pre-math

My Friend showed an improvement from 2015 to 2016. In 2015, she could count 1 to 10 but not in order. In 2016, she is able count 1 to 30 but still not in order, can mention the primary colours but is unable to identify them and knows the currencies (GHC) but cannot identify the various denominations

Pre-writing

In 2015, My Friend could choose her own colour and scribble without support. Later in 2016, she shades where her name is written on the paper and attempts writing it out by tracing and this is an improvement worth noting.

Pre-reading

In pre-reading skills, there is no change between 2015 and 2016. My Friend repeats words in stories and identify parts of the body from charts. She enjoys storytelling and can create her own stories.

- **Social/emotional**

In 2015, My Friend greets and smiles to get adult's attention and enjoys clapping and dancing with them. She feels bad when she does wrong and becomes emotional when she is restricted.

7. Sherry

- **Psychological report**

Downs syndrome with autistic tendencies

- **Annual goals**

She will recite alphabets in order and will do more picture reading to enable her develop interest in it. She will sort 3 colours independently. She will trace her name.

- **Communication**

Sherry showed a steady improvement in her communication skills. In 2013, she could identify her name on the board and her book among others. In 2015, she

was able to respond to her name and follow simple instructions, sing, report incidents that occurred in class, assists teacher on duty to conduct assembly and had difficulty in complying with complex instructions. In 2016, she could say and act rhymes, follow pictograms and sing A – Z but not in order if she has to recite the alphabets. She also was able to express herself verbally though not clearly.

- **Academic skills**

Pre-math

From 2015 to 2016, Sherry showed a dip in pre-math skills though she maintained her ability to match shapes and say 1 to 5 correctly. In 2015, she could sort two colours e.g. yellow and red but was unable to do so in 2016.

Pre-writing

Sherry improved her pre-writing skills in 2016. In the previous year, she could scribble on her own and write her name with assistance, and in 2016 she is able to write strokes on her own.

Pre-reading

The researcher saw no change in pre-reading skills in and 2015 and 2016. In both years, Sherry identified alphabets “A” and “D” and recited alphabets but not in order. She enjoyed storytelling and can identify some parts of the body.

- **Social/emotional**

Form 2013 till 2016, she showed no improvement in her social/emotional behaviours. Sherry is sociable, plays with friends and engages others in play. She

sits long without getting up, she is extroverted and always wants to engage in conversations either with peers or teachers.

8. Jeromy

- **Psychological report**

According to a psychological report from a psychologist, Jeromy was diagnosed with down syndrome with a significant neurological deficit and severe intellectual impairment. He was diagnosed with down syndrome and autistic tendencies by the clinical psychologist of NHSS.

- **Annual goals**

He will do picture reading independently, sort two colours and match shapes to enable him do it on his own. Trace the letters of his name. he will make requests on his own by pointing, gestures or pictograms.

- **Communication**

Jeromy's communication skills in 2015 were limited to responding to his name and simple questions like "how are you?" by turning with a smile and following pictograms with support. In addition to these skills, in 2016, he can now follow simple instructions and repeat simple words.

- **Academic skills**

Pre-math

In 2015 and 2016, Jeromy maintained his pre-math skills in matching shapes and sorting 2 colours with support.

Pre-writing

Again, Jeromy showed no improvement in pre-writing skills. Between 2015 and 2016, he scribbled without prompt and support on both sides of the paper.

Pre-reading

In 2015, Jeromy enjoyed picture reading and in 2016 he tears the p.s with pictures he like out of the book. This was a change of negative behaviour he acquired as it was dAmyging.

- **Social/emotional**

Jeromy exhibited a change in his social and emotional behaviours over the years. In 2015, he smiled at adults who were nice to him. He salutes to greet when he comes to school in the morning and waves to say bye-bye when he is going home. He knows it when he is wrong. He has a negative facial expression when he is sad. In 2016, he started enjoying outdoor games with peers.

9. Griffy

- **Psychological report**

Griffy was diagnosed with classical autism in 2014 by a clinical psychologist at the 37 Military Hospital in Accra, Ghana upon request by NHSS prior to his admission.

- **Annual goals**

Griffy should follow pictograms and match shapes on his own.

- **Communication**

By 2016, Griffy had acquired additional communication skills. He could draw your attention when he needs something by holding your hand and gently taking you to the object he needs. Whereas in 2015, he could only make sound, shout and follow pictograms with support.

- **Academic skills**

Pre-math

In 2015 and 2016, Griffy could match shapes with hand over hand assistance. He added no skills in this field.

Pre-writing

Griffy gained independence in scribbling over the year. In 2015, he scribbled with support but did so without support in 2016.

Pre-reading

Change was recorded in pre-reading skill acquisition for Griffy. In 2015, he enjoyed picture reading and in 2016, in addition to that he was able to listen to stories and music.

- **Social/emotional**

No changes were identified in Griffith's IEP from 2015 to 2016. He does not recognize danger, he plays on his own and socializes with familiar faces by walking up to you. He is sometimes solitary.