LINGUISTIC AND EDUCATIONAL THERAPIES GIVEN TO AUTISTIC CHILDREN AT CITY PRIMARY SCHOOL: A CASE STUDY

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Declaration

This dissertation is my original work and has not been presented for the award of a degree or diploma in any university or for any other award.

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Dedication

TO:

My parents Samuel Mirieri and Grace Mokeira, my dear siblings, Machuka, Kwamboka, Nyamokami, Omae and Morara, my dear husband, Frank, our son, Annan and to all children with autism.
Acknowledgement

My strength comes from the lord who has given me life and health. He makes me lie down in
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these children we can treasure the gift and meaning of proper language.
Abbreviations

AAC- Augmentative and Alternative Communication.

ASL- American Sign Language

C-Ds- Cognitive Development systems

IQ- Intelligent Quotient

KIE- Kenya institute of Education

KSL- Kenya Sign Language

PECs- Picture Exchange Communication systems
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Definition of terms

Asperger’s syndrome - an autism spectrum disorder which is characterised by significant difficulties in social interaction, stereotypes and other restricted and repetitive patterns.

Autism - a brain development disorder characterized by impaired social interaction and communication and by restricted and repetitive behaviour.

Autistic savants - those autistic individuals who are exemplary in certain activities like painting.

Communication - receptive and expressive areas of language, which may be spoken or non-spoken through art, movement, music, written work and speech.

Echolalia - the repetition of vocalizations made by another person.

Educational therapy - methods of classroom teaching that aim at improving

Linguistic therapy - the language levels and how they are presented to autistic children to improve their communication in autistic children.

Pronoun reversal – a language abnormality common in the speech of autistic children in which they refer to themselves as “he”, “she” or “you” or by their own proper names.

Speech disorder - impairment in the production of oral or spoken language

Stereotyped words - words used by the autistic children repeatedly but have no meaning

Writing - the mechanical act of holding a pen and putting marks on a surface.
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Abstract

The study sought to investigate the therapies applied to autistic children in Kenya. Thus, it looked at various linguistic and educational interventions offered to autistic children. It also sought to find out the effectiveness of these therapies.

The motor theory was used to handle the language production aspect while indications of impairment in the children’s ability to communicate were explained using the theory of mind blindness.

The study took place at the City primary school, with a lot of coordination with Autism Society of Kenya. Interviews were used to get information from the teachers about the children’s progress and the kind of educational and linguistic therapies they apply on autistic children. Observations of the behaviour of the children and communication patterns were made.

Data was analysed qualitatively where observation notes were compiled and interviews were interpreted and presented in written form. Photographs were interpreted in order to describe the setting under which therapy sessions took place.

The study came up with the following findings: The teachers combined linguistic and educational therapies. Linguistic therapies used include: Augmentative and alternative communication, Realia and pictorial system, Writing, Facilitated communication, Music therapy and social scripts and Occupational therapy. Educational therapies used include: Visual approaches, Functional communication teaching, Miller teaching and Social skills education.

A key recommendation of the study is that the ministry of Education should come up with a reliable curriculum that would allow autistic children to attain high levels of education.
1.0. Background Information.

Though human beings have the ability to produce language, it is not unusual for them to have speech disorders or language handicaps. Language handicap refers to any systematic deficiency in the way people speak, read, and write or sign that interferes with their ability to communicate with their peers (Crystal, 1997).

The causes of the different disorders can be organic or inorganic. For example, many children are born with brain damage that impairs linguistic skills. Parts of the brain can be destroyed by illness, stroke, accidents or acts of violence. However, in the majority of the disorders, it is difficult to find clear causes. Thousands of children have delayed language development but nothing in their history can account for their language related and communication related problems.

Autism is one of such conditions and is a common cause of communicative incompetence among children in Kenya. Autism is a puzzling and distressing state which affects a considerable number of children worldwide. It is a brain development disorder characterised by impaired social interaction and communication, and by restricted and repetitive behaviour. Autistic children display a range of deficiencies and often present bizarre patterns of behaviour. There may be a genetic element and autism may be a manifestation of errors in the programming of neural development, pre- and post-natally. One of the central aspects of autism is deficiency in speech development and the absence or distortion of the use of words and word order thus making communication difficult for the affected children. Because of their notable lack of social empathy, autistic children suffer intensified isolation. It is a disorder affecting cognition and language development.
The language development in autistic children is characterised by limited speech. Autistic individuals have problems understanding and using any form of communication, non-verbal as well as verbal. Some autistic children do not develop any useful language at all while others use only stereotyped words or phrases that have little or no meaning. Those who have speech do not develop the ability to have a conversation with others while some have echolalia which is a form of communication in which people echo other people’s utterances by constantly repeating what they hear. They have difficulty in shifting the focus of attention from one topic to another. They tend to look away from the speaker rather than maintain eye contact (Prizant, 2000).

In the Kenyan traditional society, they are categorized as mentally handicapped but recently the society has found ways of accommodating them through linguistic and educational therapy which is meant to help them communicate. Formal involvement of autistic children in educational matters is a recent development in which various interventions are used to enable the children communicate.

There is no consensus about the causes and treatment of autism. There has been a tendency in Kenya to enrol autistic children into normal school programmes or even in mental schools. The latter option is based on a long held belief that their problems are of a mental nature. Currently, their needs are being looked into by the Autism Society of Kenya, which caters for the autism spectrum disorders and has established a special unit in City Primary School. Here, they are put through educational and linguistic therapies to help them communicate.

Although a lot of research has been done in Europe and other developed countries in the area of autism (Kanner, 1943; Rutter, 1978; Wing, 1978; Asperger, 1944; Frith, 1985; Flusberg, 1985) there are few studies regarding the therapies that could improve the communication of
the autistic children in Kenya. Autism is still a new concept in Kenya and was identified as a category of special education in 2003 by the Kenya Institute of Education (K.I.E). It is also important to note that previously autistic children did not have special educational and linguistic programmes to meet their needs as they were put in normal and mental units.

It is from this premise that the study seeks to investigate the educational and linguistic therapies given to autistic children in Kenya to improve their overall communication.

1.1. Statement of the Problem.

Language is important to human beings in communication and when it is impaired, communication is adversely affected and interaction becomes difficult. Autistic children have impaired language and hence impaired communication and so they miss out on an important aspect of their development: interaction and sociability.

They may react to what is going on around them in unusual ways such as reacting aggressively to a touch. They often can’t make interactional and discoursal connections that other kids make easily for they have trouble linking words with their meanings. It is noted that this condition is untreatable but such children can be helped so as to improve their communication ability through different therapies.

Although a lot of research has been done in this area in the developed world, there are no published materials or other forms of documentation in the area of educational and linguistic therapy here in Kenya, hence, there is very limited documentation in this area. It is this gap in knowledge that the current study sought to fill.
1.2. Research Questions.

The study attempted to answer the following questions:

i. What are the linguistic therapies given to autistic children?

ii. What are the educational therapies given to autistic children?

iii. What are the effects of the therapies on the communication of autistic children?

1.3. Research Objectives.

The study attempted to achieve the following objectives:

i. To find out what linguistic therapies are given to autistic children.

ii. To find out what educational therapies are given to autistic children.

iii. To investigate the effects of the therapies on the communication of autistic children.

1.4. Research Assumptions.

The study was based on the following assumptions:

i. That there are linguistic therapies given to the autistic children.

ii. That there are educational therapies given to autistic children.

iii. That these therapies considerably improve the communication of these children.

1.5. Rationale of the Study.

A speech therapist in an American hospital said that she was amazed at a patient's gain in language, insight and social pragmatics after speech therapy was applied (www.autism.org).
It is often frustrating when an autistic child’s world and that of the family’s fall apart. Some children do not speak at all yet they cannot be classified as being mentally ill. Since they do not use language meaningfully, their social lives are affected. This reality provides the need to study how the communication of autistic children can be improved.

The study focused on the educational and language therapies for autistic children. It is hard to study particular linguistic features such as syntax, morphology, and phonology since the majority of these children do not have a developed language that can be analysed. Therefore, looking at the interventions will give insight into how they are helped to improve their communicative ability.

In Kenya, there is limited literature on the language of autistic children and more especially the interventions that improve their communication. Most of the sources reviewed by the researcher are dated; therefore, this study sought to update literature in this area.

The study is important in that the various parents and the general public will be aware of the various disorders in the autism spectrum. It will also help those dealing with autistic children to realize that the intelligence level of autistic children is not necessarily low; in fact, there are autistic savants who have great ability to perform extra-ordinary activities. The findings have been documented to benefit parents, caregivers, speech therapists, teachers and the general public. The study contributes to the development of special education and language programmes for autistic children. It has also highlighted the language needs that require emphasis.

In most programmes that have worked in the developed countries, educational and linguistic therapies are used together for effective improvement. The research aimed to assess how the
teachers at City Primary School combine the therapies and if they lead to improvement in the communication of autistic children.

1.6 Scope and Limitation.

A representative sample of autistic children from the City Primary School was studied. City Primary School has a fully-foledged unit supported by the Autism Society of Kenya. Comprehensive data was collected which represented all the autistic cases in Nairobi and in Kenya. It focused on the children at the advanced level who had been under the therapy for a period of time. It also focused on the teachers who handle the different types of therapies to assess how they use these therapies.

The different educational and linguistic therapies were looked at. Communication of autistic children was assessed after the children had undergone special educational and linguistic programmes.

Literature on educational and linguistic therapy was reviewed from within and outside Kenya. It was not possible to cover the opinion of parents, paramedics and other stakeholders because of time constraints and resources.

1.7. Summary

The foregoing chapter dealt with the background information, statement of the problem, research questions, research objectives and research assumptions. It also dealt with the rationale of the study and the scope and limitation of this study. The coming chapter deals with the literature review and theoretical framework.
CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.0 Introduction

In the previous chapter, an introduction to the problem on which this study is based was given. In this chapter, a number of areas are given focus. First, a brief review of literature on autism and its characteristics is carried out. Then the various therapies that have been used with the children are dealt with. The theoretical framework takes an eclectic approach where two theories are used: the motor theory and the theory of mind blindness.

2.1 Characteristic Features of Autism

Autism goes by many names. Among these include: “emotional disorder” and “childhood” schizophrenia and Asperger’s syndrome. Rutter (1978) says that it can begin in childhood and can be recognized by the same symptoms that characterize the adult disorder: fundamental disturbance of personality, a distortion of thinking (often including a sense of being controlled by alien forces), delusions which may be bizarre, disturbed perception and abnormal affect, visual and auditory hallucination, disturbed mood and blunted emotion.

Autism was identified by Kanner in 1943 in a classic paper in which he listed the following as its characteristics: extreme social isolation (aloneness), obsessive behaviour to maintain sameness and flashes of purposeful behaviour.

Kanner (1943) observed that verbal autistic children often focus on lists, slogans and rhymes that have little communicative intention. Such children have a good rote memory and a tendency for echolalia and pronoun reversal.
Autism is still defined by the various experts primarily by its behavioural manifestation: impairment of interpersonal relationships, impairment of language, insistence on sameness, disturbances of sensory input and disturbances of motility. There is a failure to develop relationships with other people. Kanner (1943) suggests that all the other symptoms occur because of this profound social withdrawal.

Although this position is no longer held, it continues to influence some approaches to autism. Ornitz (1978) observed that 90% of all the cases he studied ignored people as if they did not exist, avoided looking people in the eye and acquired objects by directing another person's hand.

Language impairment is considered central to autism. The autistic children who develop speech tend to be echolalic and produce inappropriate utterances. Echolalia refers to automatic repetition of words heard. It is a common abnormality in children with autism that is evident in 75% of verbal individuals with autism (Baltese and Simmons; 1981; Sullivan, 2003). According to Prizant (1997), echolalia is the imitation of the speech of others and may be immediate or delayed. Immediate echolalia has been regarded as meaningless with no comprehension of the repeated utterance and no communicative intent. Many cases of delayed echolalia are also nonfunctional; however, compared with immediate echolalia, it often has been found to have a clear, communicative intent (Koegel and Koegel, 1996; Mauk, et al, 1997).

Early studies argued that the presence of echolalia is a necessary first step in language acquisition and that the amount of echoing is positively correlated with linguistic ability (Risley and Wolf, 1967). However, Fay rejected this concept and Butler (1968) argued that
echoing was nonfunctional and undesirable because it leads to poor language acquisition. In support of Risely (1987), Tager-Flusberg (1996) maintained that children with autism who progress beyond echolalia usually acquire a more advanced aspect of grammar but show persisting problems in following social rules and shifting between speaker and listener roles of conversation. Fluster further states that some types of both immediate and delayed echolalia are not just nonfunctional or self-stimulatory, but are functional with communicative intentions.

Therefore, echolalia may be the only strategy available for responding when a question or statement is beyond the child's comprehension; it may serve to enhance language learning as well as to promote social interaction. Sometimes, an echolalic utterance is usually equivalent to a single word or label for a situation or event. Many children may learn to use echolalia purposefully in communicative interactions and eventually may be able to break down large echolalic chunks into smaller, meaningful units as part of the process of transitioning to a rule-governed, generative language system. This study will review the importance of echolalia in communication and whether the teachers employ it or they work to discourage its use.

According to Kanner (1943), autistic children have a tendency to reverse pronouns. In his 11 published case studies, he gave prominence to children's abnormal use of personal pronouns. Many clinicians have reported that children with autism who echo consciously refuse to use the pronoun / and instead refer to themselves as "you" (Glandin and Scariano, 1986; Kanner, 1943; Lee and Hobson, 1994). For example, the child may say, "You want a cookie," instead of, "I want a cookie." Various explanations for the abnormality in pronoun use have been suggested. The psychoanalytic approach interprets that some motivational and emotional
factors may underlie the refusal of children with autism to use “I” (Bettleheim, 1967). Some use personal pronouns strangely, referring to themselves not only as “you,” but also as “he” or “she” (Lee, 1994 and Tager-Flusberg, 1996). These errors reflect difficulties in conceptualizing notions of self and other, as they are embedded in shifting discourse roles between listener and speaker.

To use pronouns such as I, the child must realize that the referent of I changes constantly in reciprocal conversation, depending on who is the speaker (Capps, 1998; Frith, 1999). Bartak and Rutter (1974) viewed it as a result of echolalia and argued that failure to use I was just the accidental combination of its usual position in sentences and the tendency of children with autism to echo only the latter parts of sentences they hear.

An alternative explanation of persistent pronominal errors in children with autism is proposed by Oshima-Takane and Benaroya (1989). They state that many normal children acquire correct use of pronouns by attending to speech addressed not only to them, but also to others. They maintain that normally developing children extract information from speech addressed to another person and that observing pronouns used in speech addressed to another person is very important for the acquisition of correct use of pronouns. However, children with autism who have a severe attention deficit often do not attend to the speech of others and therefore make pronominal errors.

Although it is unclear exactly why children with autism make pronominal errors, it has been attributed to a psychosocial deficit, a result of echolalia that reflects a lack of comprehension, or a failure to observe pronouns in speech addressed to another person. Regardless of its
cause, pronoun reversal is a frequently observed behavioural symptom in echoing children with autism.

Asperger's Syndrome is a milder form of autism. It is a neurological disorder that, like others in the spectrum, is marked by difficulties in communication and social interaction. Austrian paediatrician Asperger Hans (1945) identified the set of characteristics easily identified with the condition. Children with Asperger's Syndrome find it difficult to identify and express their feelings just like those with classic autism. They find it difficult, even impossible, to connect with others socially. They often don't hold eye contact and have trouble reading other people's faces and gestures. Many kids exhibit the following behaviours often associated with classic autism: flapping of hands, speaking without much emotion, following schedules rigidly and showing intense or obsessive interest in one subject.

Autism is essentially a disorder in interpersonal communication from the earliest life; the autistic child appears unable to establish a communicative partnership. Kanner (1943) points out that normal children develop their first relationship through the exchange of a social smile at about two months of age. He notes that parents of autistic children often report that the social smile is missing in their children.

Avoidance of gaze persists in older autistic children who tend to respond to attempts to establish eye contact by moving away, turning away, averting their own gaze or putting their heads down. They may approach adults from the back or the side. A positive response from an adult, such as a direct gaze or smile will immediately cause them to withdraw while contact may produce over-arousal and some would be happiest when left entirely alone (Wing, 1978).
Developmentally, the normal child progresses from the exchange of a mutual gaze to a recognition of tones of voice. Turn taking in vocal interaction between infants and their caretakers often occurs by several months of age. In addition, the normal infant is sensitive to the acoustic features that identify speakers and signify emotion and thereby communicate the intent of the utterances (Menyuk, 1978). During the first several months of life, normal infants begin to respond to their caretakers by attempting to accommodate their bodies to the person holding them. They begin to raise arms in anticipation of being picked up. But parents of autistic children reported that their children prevented any anticipatory response of being picked up, and when they were picked up, they either held themselves stiffly or seemed to melt into the adult’s body (Rimland, 1964).

Other social behaviours that fail to develop in autistic children are vocal responses or gestures and greetings like hallo, and bye bye. Unlike other toddlers, autistic children do not follow their parents around the house, run to them with affection, go to them for comfort or develop bedtime routines. In short, they appear unacquainted with their caretakers and when being examined, they may follow the examiner without seeming to recognize that person as a stranger. They enjoy tickling and roughhouse play. At such times, the child may laugh and express pleasure while seeming unaware of the adult who is providing the stimulation.

Baron (1977) asserts that as they become older, they fail to use gestures, head nods and facial expressions to communicate. They also fail to make any efforts to reinforce the speakers, and seem unable to read the faces of others just as they fail to use facial expressions themselves to communicate. Also, they pay no attention to clear-cut signs of disapproval at their socially inappropriate behaviour such as hand flapping, rocking and whirling.
In a normal child, non-verbal communication precedes acquisition of words. This non-verbal communication consists of regulatory function. The exchange of information is evidenced by pointing and mutual gaze and greeting is expressed by attention and vocalization. Autistic children are poor at using the direction of another person's gaze to help them work out the referent of a novel world and this may hamper vocabulary growth (Baron, 1977).

The communication of autistic children is often described as mechanical with an absence of commenting about aspects of their environment (e.g. by pointing at objects), a lack of eye contact with other people and a little following of another's eye gaze.

About 1/5 of children with autism have IQ scores in the normal range. There is great variability in the characteristics of these individuals, but even those who make the most progress experience difficulties relating to and communicating with other people.

2.1.1 The Triad of Impairments in Autistic Children and their Implication on Communication.

Autistic children have three major impairments that affect their communication. These impairments include: social impairment, communication impairment and impairment of imagination and thinking. Each one of these impairments is discussed briefly. The effects the impairment has on communication are also stated.

The first is social impairment. According to fact (kluth, 2000) and subsequent proof by the researcher through observation, learning is a two way process which involves reception and production of what is learnt. This substantial factor is lacking among autistic children. They have far-reaching problems with social interactions which have profound effects on peer tutoring and turn taking skills.
According to Lett (1992) to improve these inadequacies, teachers should make the school and classroom set ups to be social settings that are stimulating enough to captivate autistic children's attention. Autistic children lose concentration quickly; a one to one approach is required to make learning activities meaningful. They are unique and their needs are not the same. Using a one to one approach helps teachers of autistic children to address the needs of individual children satisfactorily.

Lett continues to argue that teachers should also use group therapy where turn taking skills are emphasized. Rolling a ball back and forth as a teacher or a therapist verbalizes what he/she is doing is important. The teacher can then point at himself/herself saying to each child "It is your turn". This is aimed at making the children aware of other people around them and inculcate turn taking skills.

Games are seen to be very beneficial to the children's social interaction. Teachers should start on an activity or a game. Then they stop and try to get the children to request for more games. The desire for more play should be seen when the children move their bodies or look at the teacher after some demonstrations from the teacher (Crossley, 1978).

Crossley further says that as the children play, they learn to request, demand and co-operate. All the vocabulary involved in these functions are taught. These games therefore are aimed at helping autistic children improve their social interaction and engage in other communicative situations. Teachers can initiate games such as rolling the ball and skipping a rope, which involve turn taking skills and encourage children to play with others. Other therapies like social stories, excursions and music sessions are aimed at improving social interactions of autistic children. Teachers can tell stories and engage autistic children actively (e.g. by asking
questions related to the stories). This study aimed to find out if the teachers apply these forms of therapies on autistic children.

Second is the communication impairment where many autistic children remain non-verbal. However, some may be verbal but fail to use speech for communication. This kind of impairment affects feedback and the way of processing information (Kanner, 1943). Some autistic children use speech but it is usually idiosyncratic and unrealistic. For example, they can recite all the words from a song but cannot ask for anything they need. Some autistic children use words functionally (i.e. dominant use of nouns and verbs and can use requests and rejections to regulate their environment).

Echolalic children repeat words and phrases over and over again. According to Kluth (2000), this phenomenon (echolalia) where sounds, words, tones and phrases are repeated provides auditory stimulation to autistic children and it has a function among autistic spectrum disorders children because it helps them to access and control the language they would like to use. The research aimed to find out how the children use echolalia to take turns in conversation or answer questions. They also use echolalia to process information. When used for conversation teachers repeat the children’s utterances using correct expressions. When used for answering questions, the teachers repeat the children’s answers using the correct language in order to emphasize the correct usage of language.

Impairment of imagination and rigid thinking is the third deficit. Children with autism often show resistance to change and are more comfortable following the same routine (Baron-Cohen, 1995). Autistic children show inability to imagine things which have not already been experienced (e.g. new or different situation can be unimaginable). Changes in routine are
frightening and disorienting without the ability to imagine an alternative order of events. They do not realize that other people’s mental states are different from their own.

Impairment in imagination and rigid thinking adversely affects interpersonal relationships and has profound negative effects on the introduction of new concepts. This results in poor language development and usage. This study aimed at finding out how the children are helped in order to manipulate language to suit various situations. The phenomenon of echolalia pointed to the fact they have impaired imagination.

Contingency contracting is recommended by Klaune (1994) which involves a teacher giving an activity and providing conditions for that activity to be completed. (e.g. you will take your juice once you finish copying that work). This helps in varying the activities and hence exposing the children to a wide range of vocabularies associated with the new skills. The teachers practice flexibility and they give room for change of activities.

2.1.2 Language in Relation to Autism.

From a descriptive standpoint, one of the most striking features of autistic children is impaired language (Rutter, 1975). They communicate poorly or not at all, either by word or by gesture. Besides language impairment, autistic children have impairments of perception, memory or motor skills as well. Speech is seen here as the ability to emit sounds, which can be recognized as words. Language refers to more complex, abstract structures and has a comprehensive function than speech does. However, speech may be the commonest manifestation of language, and refers to the meaningful association between signs and symbols, either spoken words, written symbols, gestures or play or use of sequences which
are essential to communication (Crystal, 1997). The speech of autistic children may be impaired but their language is usually impaired, and very seriously so.

They show greater I-you pronoun reversal, echolalia, stereotyped utterances and inappropriate remarks. They lack the ability to make use of syntactic structures. Many autistic children have an immediate memory span equal to that of normal children (Wing, 1978). The researcher wanted to find out if these characteristics are ameliorated after the therapies are applied.

It has been estimated that half of the individuals with autism are not able to speak or use language. In some cases, this appears to be because of lack of motivation to engage in social processes, rather than a lack of capacity to produce words. Some individuals with autism seem aloof, avoiding eye contact and other social interaction. Others are passive and although they may respond, they rarely initiate interaction. A further group initiate interaction but do not seem to be interested in the replies that people give them (Rutter 1975). This was apparent among autistic children that were studied in City Primary School where a child would ask a question and not pay attention to the response given.

Autism is usually but not always accompanied by a low IQ. There is a tendency of individuals with a low level of general ability to have little in the way of productive language and to have difficulties in engaging in communication. There are claims that the children who do not produce single word speech by six years are unlikely to develop the use of multi-word speech (Kanner, 1943).
Kanner observes that in communication, there is delay in or total lack of development of spoken language. In those individuals with adequate speech, there is a marked impairment in the ability to sustain conversations. They show stereotypes and repetitive use of language or idiosyncratic language. Also there is lack of varied spontaneous “make believe” or social initiative play relative to developmental levels.

2.2 LINGUISTIC THERAPIES

Linguistic therapies refer to the various linguistic levels (i.e. morphology, phonology, semantics and syntax) and how they are presented to autistic children in various stages to improve their communication.

2.2.1 Linguistic Levels Therapy.

Lovaas (1977) has a programme that directs its efforts towards severely impaired mute autistic children. It starts by building first words and abstractions about relationships among objects and events and progresses to install social language used in conversation and information exchange. In mute children, it has been possible to successively shape vowel sounds into words and then increase the repertoire of words.

Semantic content approach can be used where specific lexical items are used either in isolation or in semantic relations (agent-action) to other lexical items and serve as the primary base for intervention. This procedure emphasizes teaching the association of symbols with concepts.

In the grammatical content approach is where word strings are chosen and presented to the child on the basis of grammatical relations: subject-verb-object and noun phrase + verb
phrase. This syntactic approach emphasizes the teaching of grammatical forms and patterns with little attention to meaning.

Pragmatic content intervention begins at the pragmatic level and emphasizes the use of language in the child's environment. The premise is that children who are not communicating have not developed the social needs and responses to do so. Consequently, a desire for communication must be established before formal attention is given to any of the other dimensions of language. Skills such as drawing attention to self and the use of social agents to obtain ends are taught. Once language is established, grammatical skills are evident in the behaviour of labelling, repeating, answering, requesting, calling, greeting, protesting and practicing (Dore, 1974).

This study looked at how these linguistic approaches are applied as therapy to improve communication in autistic children.

2.2.2 Signed Speech or Simultaneous Communication.

Sign language was first developed as a means of communication for hearing-impaired individuals. Sign language has also been used to teach people with developmental disabilities who have little or no communication skills. Teaching autistic children how to use sign language is not as common a practice today as in previous years, possibly due to an increase in the use of computerized communication systems. However, research suggests that teaching sign language along with speech will most likely accelerate a person's ability to speak (Miller and Miller, 1973). Teaching sign language and speech at the same time is often referred to as Signed Speech, Simultaneous Communication, or Total Communication.
Miller says that sign language is useful for those individuals who have little or no verbal abilities or communication skills. It is not recommended for those who have a relatively large vocabulary. Furthermore, persons with a variety of functioning levels can be taught to use sign language. Much aberrant behaviour associated with autism and other developmental disabilities, such as aggression, tantrums, self-injury, anxiety, and depression, are often attributed to an inability to communicate to others. Signed Speech may, at the very least, allow the person to communicate using signs and may stimulate verbal language skills.

When teaching a person to use sign language, another possible benefit may be the facilitation of their attentiveness to social gestures of others as well as of their own. Teaching sign language to people with autism and other developmental disabilities does not interfere with learning to talk; and there is research evidence indicating that teaching sign language along with speech will actually accelerate verbal communication.

The research sought to find out whether signed speech is used as therapy by the teachers and the effect it has on autistic children.

2.2.3. Music Therapy and Autistic Children

Staum (2000) states that music therapy is the unique application of music to enhance personal lives by creating positive changes in human behaviour. It is an allied health profession utilizing music as a tool to encourage development in social/ emotional, cognitive/learning, and perceptual-motor areas. Music Therapy has a wide variety of functions with the exceptional child, adolescent and adult in medical, institutional and educational settings. Music is effective because it is a nonverbal form of communication, a natural reinforcer and immediate in time and provides motivation for practicing non-musical skills. Most
importantly, it is a successful medium because almost everyone responds positively to at least some kind of music.

Staum further says that music therapy is particularly useful with autistic children owing in part to the nonverbal, non-threatening nature of the medium. Parallel music activities are designed to support the objectives of the child as observed by the therapist or as indicated by a parent, teacher or other professional. A music therapist might observe, for instance, the child's need to socially interact with others. Musical games like passing a ball back and forth to music or playing sticks and cymbals with another person might be used to foster this interaction. Eye contact might be encouraged with imitative clapping games near the eyes or with activities that focus attention on an instrument played near the face. Preferred music may be used contingently for a wide variety of cooperative social behaviours like sitting in a chair or staying with a group of other children in a circle.

According to Staum (2000), music therapy is particularly effective in the development and remediation of speech. The severe deficit in communication observed among autistic children includes expressive speech, which may be nonexistent or impersonal. Speech can range from complete mutism to grunts, cries, explosive shrieks, guttural sounds, and humming. There may be musically intoned vocalizations with some consonant-vowel combinations, a sophisticated babbling interspersed with vaguely recognizable word-like sounds, or a seemingly foreign sounding jargon. Higher-level autistic speech may involve echolalia, delayed echolalia or pronominal reversal, while some children may progress to appropriate phrases, sentences, and longer sentences with non-expressive or monotonic speech. Since autistic children are often mainstreamed into music classes in the public schools, a music
teacher may experience the rewards of having an autistic child involved in music activities, which may assist development.

The researcher wanted to establish whether the teachers use musical therapy and if they do, determine the linguistic units (e.g. sounds, words, phrases, and sentences) introduced at various stages.

2.3 EDUCATIONAL THERAPIES.

Educational therapies refer to the various teaching methods and activities carried out by a teacher in order to improve the communication of autistic children.

One of the methods is the psychogenic approach used by Bettelheim (1976) where he separated the autistic children from their parents and placed them in an environment that was unstructured and completely accepting. Play therapy is one of the methods of psychogenic approach to remediation. Axline (1976) says that a child should be allowed to set up his own play and the therapist, by observing, will gain insight into the child's problems and work through them.

The proponents of this method suggest that language development depends on the child's capacity to acquire an understanding of some level of symbolic representation, and that this capacity is most related to his/her ability to learn how to play. (Shapiro, 1978) says that play may be based upon the same symbolic functioning as is speech.

Another method is Behaviour Modification approach which holds that the primary goal of therapy is not to foster a strong emotional bond between the adult and the child but rather to deliberately teach specific skills. Sullivan (1976) states that firm external structure must be
imposed on the child because the handicap of autism has prevented the child from developing his own internal control of behaviour. The goal of this therapy is to provide a highly structured and individualized learning programme designed to help the children minimize their disabilities. The self-destructive and self-stimulation behaviours should be stopped before language teaching can begin.

The present study sought to find out whether the teachers use these particular approaches and any others as therapies.

2.3.1 Learning Styles and Autism.

Learning style is a concept that attempts to describe the methods by which people gain information about their environment. People can learn visually, auditorily and/or through touching or manipulating an object (kinaesthetically). Edelson (2001) says that autistic individuals are more likely to rely on only one style of learning. By observing the person, a teacher may be able to determine his/her primary style of learning. For example, if an autistic child enjoys looking at books (e.g., picture books), watching television (with or without sound), and tends to look carefully at people and objects, then he/she may be a visual learner. If an autistic child talks excessively, enjoys people talking to him/her, and prefers listening to the radio or music, then he/she may be an auditory learner. And if an autistic child is constantly taking things apart, opening and closing drawers, and pushing buttons, this may indicate that such a child is a kinaesthetic or 'hands-on' learner. Once a learning style has been determined, then relying on this modality can increase the likelihood that the person will learn.

The researcher wanted to observe if the teachers would exploit this concept.
2.3.2 Physical Exercise and Autism.

One of the most under-utilized yet effective treatments for autistic individuals has been exercise (Edelson, 2001). Obviously, exercise is important for everyone but especially so for those with autism in that it reduces their aggression. Several research studies have shown that vigorous or strenuous exercise is often associated with decreases in stereotypic (self-stimulatory) behaviours, hyperactivity, aggression, self-injury, and destructiveness. These behaviours are likely to cause poor communication and so it is important for them to be ameliorated.

In general, exercise is important for both physical and mental health. A number of studies have shown that vigorous exercise is one of the best treatments for depression. Exercise can reduce stress and anxiety as well as improve sleep, reaction time, and memory. This therapy is important so that the autistic children under therapy can perhaps remember the linguistic forms taught.

Edelson points out that since stereotypic behaviours interfere with teaching, a physical exercise program may also improve the student's attention in the classroom. Parents and teachers should seriously consider including a rigorous exercise program in the student's Individualized Education Program. Since physical exercise is inexpensive, safe, and healthful, it makes more sense to try an exercise program to reduce behaviour problems in the classroom and at home rather than to use more expensive and harmful treatments such as drugs.

The study wanted to establish whether this therapy helps improve the communication of autistic children and the exercises they are subjected to.
2.4 THEORETICAL FRAMEWORK

This section deals with the theoretical framework. It takes an eclectic approach where two theories have been used to assess the cognitive and language development of the children as well as their social accommodation after therapy.

2.4.1 The Motor Theory

The motor theory was propounded by Brown (1974) and it states that language is the ability of one individual to alter, through structural emission, the mental organisation of another individual. Language is more than speech just as perception is more than the organisation underlying the functions of speech and visual perception.

The theory suggests that language is constructed on the basis of a previously existing complex system, the neural motor system. The programmes and procedures which evolve for the construction and execution of simple and sequential motor movements form the basis of the programmes and procedures going to form language. A principle theme is the mosaic evolution of language—the fitting together of a whole array of elements; anatomical, neural and behavioural.

Two important behavioural elements of language are imitation and the categorical perception of speech sounds. Imitation of speech or other sounds or bodily movement involves a remarkable and complex linking of perceptions and motor organisation.
are not arbitrary but are expressive or appropriate to their meaning. There is also considerable evidence for a fundamental relationship between the syntax of a language and the physiological syntax, the syntaxes of action and perception.

Since language development is based on the development of sensorimotor, conceptual, representational and symbolic behaviour, intervention should take into account such factors. This theory was used to account for the communicative abilities of autistic children under study after the therapies were applied.

2.4.2 Theory of Mind and Mind Blindness

The theory of mind and mind blindness was propounded by Frith (1973) and it states that one of the most influential explanations of autism is that children with autism suffer from mind blindness. This refers to a lack of ability to understand that other people can have different ideas, beliefs or thoughts from one’s own.

Claims about mind blindness can be traced back to work concerning what has been termed children’s theory. A study by Wimmer and Perner (1983) investigated whether young children believe that another person has the same ideas as themselves, and whether the children could appreciate the fact that another person can have a different perspective. They found that children under about four years of age were not able to appreciate that someone might have different knowledge from themselves. Shortly afterwards Baron, Leslie and Frith (1985) found that children with autism usually gave incorrect responses to the tasks involving differences in thoughts.
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The following is acted out with puppets and some toys. Sally, one of the puppets is made to put a marble in a particular place so that it can no longer be seen. Sally leaves the room. Anne, another puppet enters and puts the marble somewhere else out of view. Sally then returns and the child is asked, “Where will Sally look for the marble?” Children below four years of age usually indicate where the marble really is; in other words they fail to distinguish
between own (true) belief and (false) belief of Sally. Children over four years of age are usually able to appreciate that Sally will look in the place where she left the marble.

This suggests that children with autism do not have a theory of mind and could explain why the children have a mechanistic view of the world and lack of interest on other people's thoughts or emotions. Further work provided additional supporting evidence (e.g. individuals with autism were found to be able to order pictures according to a sequence of activities, but not according to what people might be thinking.) They could understand the process of sabotage and not one of deception.

This theory guided the researcher to look at the therapies that help autistic children understand and accommodate other people's thoughts, feelings and emotions. The communication environment is integral to language development. Failure to establish social relations influences the entire dimension of the communication environment. Whatever needs the autistic child may have to communicate are not expressed and the child fails to engage in reciprocal behaviour with others. This eventually affects the amount of stimulation and reinforcement he receives.

2.5 Summary

The foregoing chapter has reviewed literature and presented the theoretical framework used in this study. In the following chapter, the methodology section of this research is presented.
CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction

This chapter deals with the methodology used for the study. It has five sections. First, the research design is described. Secondly, the research area and study population are outlined. The third section deals with population sample and sampling procedure. The fourth section is about a brief profile of the respondents and finally, an explanation of how the data was collected, analyzed and presented is done. The aim of this study was to investigate the linguistic and educational therapies given to autistic children.

3.1 Research Design

The study used a descriptive qualitative research design. A descriptive qualitative research design enables a researcher to explain a given phenomenon more deeply and exhaustively (Mugenda and Mugenda, 1999). The written results of the research contain quotations from the data to illustrate and substantiate the presentation. The data include interview transcriptions, field notes, photographs, personal documents, video tapes and other official records. Interviews, observation and tape recording were used to collect data.

A reconnaissance was done where the researcher visited City Primary School in Nairobi beforehand to familiarize herself with the environment and get used to the children.

3.2 Research Area and Study Population

The area of study was City Primary School situated in Ngara, Nairobi. City Primary School was chosen because it has a fully-fledged unit for autistic children which is managed by the
Autism Society of Kenya. The school has a normal unit with Standard 1-8 and in addition it has a unit for autistic children and a unit for mentally handicapped children. The autistic unit has three classes; one for mild autistic children, another for severe autistic children and a third one for those who are integrated into the normal curriculum.

3.2.1 The Autistic Unit

The autistic unit has fifty children divided into three classrooms according to the duration of therapy. Classroom schedules are posted on the classroom walls. There are storage boxes in the classrooms that keep all the materials used for therapy sessions. The unit also has a special therapy room that is equipped with modern facilities used for purposes of therapy like the trampoline, therapeutic balls and television sets.

3.3 Population Sample and Sampling Procedures

The population studied was the school going group of autistic children on whom linguistic and educational therapies are applied. There are fifty children in the whole autism unit. Out of the fifty, twenty had undergone prolonged therapy. These children were sampled by the help of the teachers: five were mute, ten had a little language and five had developed language. The second category had the largest number since majority had some level of language. The sample was representative of the autistic children because the school admits autistic children with speech and those without speech at all. Teachers of the specific classes for the autistic children were also sampled by the help of the unit administrator: four teachers with degree level education and two with diploma level education were purposively sampled. Three occupational therapists were also included in the sample. During the reconnaissance
stage, the researcher sat in the classroom during lessons and joined the children in the field during play and meal time.

3.4 A Brief Profile of the Respondents

Autism is described as a spectrum disorder because children with it have characteristics that fall into a spectrum, from very mild to quite severe (Kanner, 1942). Three main categories are: Socially ‘aloof’ children who tend to avoid all or most social contact. ‘Passive’ interactors seldom initiate social interactions but participate passively when other people initiate communication. Active but odd interactors initiate social contact; however, their social interactions are typically odd or stereotyped.

At the autism unit under study, there are mute children who do not speak at all but only grunt or hum. There are also verbal children. Among the sampled verbal children, ten speak a few words and phrases while five have fully developed language where they use complete sentences but use them inappropriately. For example; such a child would say the Lord’s Prayer when asking for a pen to write. The verbal children or mild autistic children are integrated into the normal school section where they undertake classes with normal children but the programme is adjusted to accommodate their needs. The integration points to the fact that they undertake a normal programme but their needs are accommodated. They are therefore taken to the special unit for behaviour modification (education therapy) and linguistic therapy.

Autistic children can perform ordinary activities like writing and drawing just as other normal children despite their impairments. Autistic children have the ability to perform ordinary tasks such as writing like other normal children. They also have interests like drawing and
painting, among others (Barron and Barron, 1992). Five verbal and three non verbal children could write or copy written work while all the verbal ones could write when told what to write (e.g. the alphabet, numbers, words and short phrases). The majority of the respondents could repeat what they had heard being said. They all could take instructions and execute commands as well as make requests using words or short phrase. For example, during the data collection sessions, they would say “maji” – (water) when they needed water and “kuja”-(come) when they needed the teacher to do something for them.

Six autistic children in this study could read what they had seen before. For example, children looking at familiar books in the classroom which had pictures could read and name those pictures. Three non-verbal and seven verbal children in the study sample were able to write their names. Verbal children in this sample could tell their names when asked to. This category of children echoed all questions asked. Teachers provided answers to those questions and made the children repeat them as in the example below that was tape recorded during a class session.

(c.f. appendix 6).

Teacher: Unaitwaje? – What is your name?
Pupil: Unaitwaje? – What is your name?
Teacher: Sema unaitwa James – say your name is James.
Pupil: Sema unaitwaje James! – say your name is James!
Teacher: Ninaitwa James” – my name is James.
Pupil: Ninaitwa James” – my name is James .

Some autistic children could draw cartoons when told to and sing any song they know or sing a new one with the teacher’s help. From these activities and interactions outlined above, it is the case that autistic children have the ability to perform ordinary tasks. This supports the observation noted in Barron and Barron (1992) in which they say that autistic children perform ordinary activities and have interests such as drawing, painting among others.
3.5 Data Collection Procedures and Ethical Issues

Before the onset of this study, permission was sought from the City Primary School Headmistress and the Director of Autism Society of Kenya to allow the researcher to conduct this study. After being granted permission, a reconnaissance was carried out.

3.6 Research Instruments

The following research instruments were used to collect data.

3.6.1 Interview schedule

An interview schedule was used to conduct interviews with the teachers and administrators (c.f. appendix 4).

3.6.2 Observation Schedule

An observation schedule was also used to collect data during classroom, physiotherapy and play sessions (c.f. appendix 3).

3.6.3 Tape recorder and Camera

A tape recorder was used to record communication events between teachers. A camera was also used in this study to take photograph of the therapy sessions.

3.7 Data Collection Methods

The following research methods were used to collect data.
3.7.1 Interviews

Interviews were carried out with the teachers in order to gather information on the following:

i. The communicative ability of the children when they joined the autism unit

ii. The educational and linguistic therapies applied to autistic children

iii. The communicative levels of the children after the therapies are applied.

3.7.2 Observation

An observation was used in order to look at the various behavioral aspects that affect the communication of these children. Observation was done when the children were under therapy in the classroom, playground, therapy room, and dining hall to see how each therapy was administered and how learners responded to each one. Observation was also done outside the classroom to determine how the different children interact with their peers and other people.

3.7.3 Tape Recording.

Tape recording was done on the children who had been under therapy for over one term when they were freely communicating to capture all their utterances. This was important because the researcher took into account the type of spoken language used and the communicative competence of the children who had undergone any form of therapy. Tape recording was also done between teachers and the children in and outside the classroom. A transcription sample from the recording is available in appendix 6. Non-verbal features important in communication were taken into account so the data collected could not rely on written responses only.
3.7.4 Photographs

Photographs were taken during therapy sessions in the classroom, in the therapy room and at the playground. The photographs are available in appendix 7c.

3.8 Data Analysis and Presentation

The tape-recorded communication events in the in class and playground between the teachers and the children were transcribed and analyzed as soon as possible. Since the interview guides had structured questions, the qualitative data analysis procedure was employed. The data was organized through identification and sorting and were organized according to topics based on the objectives of the study. Written data collected through observations was also analyzed and discussed descriptively. The photographs taken were also used to capture activities in the therapy sessions (See appendix 7c).

3.9 Summary

This chapter has described how data was collected right from applying for permission to gathering information at the site of the study. What follows in the next chapter is the presentation and analysis of this data.
CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

The preceding chapter has demonstrated how data was collected from the respondents. This chapter has two main sections. First, it discusses the linguistic therapies and then the educational therapies given to autistic children in City Primary School. Section 4.1 is on linguistic therapies and has six subsections as follows. Section 4.1.1 discusses Augmentative and Alternative Communication, 4.1.2 talks about Realia and Pictorial System of teaching language, 4.1.3 is about Writing, 4.1.4 discusses Facilitated Communication, 4.1.5 is about Music Therapy and Social Scripts and 4.1.6 discusses Occupational Therapy. Section 4.2 covers Educational therapies and has the following four subsections: 4.2.1 which deals with Visual Approaches, 4.2.2 Functional Communication, 4.2.3 Social Skills teaching and 4.2.4 Miller teaching. Since autistic children have profound impairments in communication, socialization and imagination, these therapies have therefore been in use to improve these impairments.

4.1 Linguistic Therapies Given to Autistic Children.

There are a number of linguistic therapies given to the children under study at the autism unit. These therapies are not given in isolation but are combined with educational therapies. They include: augmentative and alternative communication, realia and pictorial system of teaching language, writing, facilitated communication, music therapy and social scripts and occupational therapy.
4.1.1 Augmentative and Alternative Communication (AAC)

Augmentative and alternative communication is a type of approach that enhances speech or adds to the way one says something. It includes: writing, drawing, gesturing, body movements, eye gaze, pointing, facial expressions and sign language. In this study, teachers utilized all these ways of augmentative and alternative communication.

Teachers wrote and read to the children what they had written on the board as shown below.

For example,

Yesterday, I went to the market. (Statement)
My mother is coming to pick me (up) at 2:00 p.m. (Statement)
I am feeling tired, I want to write. (Statement)
Please, let me go for break. (Request)

These expressions were used to reinforce language items like verbs (go, write) during the different sessions as teachers interacted with the children.

Autistic children often have difficulty expressing their wants in speech; they therefore use drawings instead. Children under this study were allowed to draw what they intended to communicate. Teachers responded to the drawings by speaking about what had been drawn.

Below are examples of drawings children made to communicate their intentions:

Figure 4.1: Drawing of a desk and a chair
This is a drawing of a desk and a chair done by one of the children to indicate that he had arrived at school. The teacher in charge spoke about it as shown below:

Teacher: Ted, you have arrived already?
Ted: ummmm!
Teacher: Now sit down.

Figure 4.2: Drawing of clouds

This is a drawing of clouds and it was done by the same child to indicate that he wanted to leave school before it rained. It was observed that this child used this drawing even when there was no rain. Teachers explained that he had a short attention span and they had to change his schedule and send him for occupational therapy. They engaged the child in communication as follows:

Teacher: I am sure you are tired.
Ted: ummmm.
Teacher: You can go out now. (A teacher assistant escorts him to the physiotherapy room).

Figure 4.3: drawing of balls.
This is a picture of balls drawn by another child to indicate that she wanted to go and play. Teachers either allowed her if it was time for break or prohibited her from leaving the class and commanded her to wait.

Another form of augmentative and alternative communication that was utilized was pointing. Many children pointed at items they wanted to be given or they wanted to convey information about. Teachers labeled these items which served to expand the vocabulary of autistic children. For example, if a child held a cup, the teacher would say “this is a cup” and ask the children to repeat. The children also pulled the teachers’ hands towards the direction they wanted to go or obtain something they needed. Teachers also reported that they also point at what they are talking about. They said that autistic children under study showed difficulty in using the direction of another person’s gaze to help make meaning of the referent world, hampering vocabulary growth. Encouraging children to point at items as they labeled them and pointing at what the teachers are talking about helps increase the vocabulary of these children.

It was reported that at the initial stages, these children did not easily part with what they were holding. For example, if a child has a pen and is told to share, he can’t do it. However, those children who had undergone over one term of therapy responded positively when asked to share what they had. For instance, a teacher would give one child a bottle of juice and ask the child to divide it among four others. It was observed that in such instances, the children would comply. This is supported by the theory of mind blindness which explains why autistic children do not understand that other people have feelings different from their own.
In the developed countries, sophisticated methods like computer based systems with synthetic voices and teacher created letter boards are used to aid in instructing and communicating with autistic children. In this study, however, such systems were not available.

Sign language and gesture systems are other forms of augmentative and alternative communication that were adopted in this study. Sign language uses hand shapes, hand movements and facial expressions. For example, American Sign Language (ASL) is preferred over other sign languages like Kenya Sign Language (KSL) at the autism unit. ASL is distinct from spoken English for it contains its own syntax and grammar and supports its own culture. The origin of modern ASL is ultimately tied to the confluence of many events and circumstances, including historical attempts at deaf education. ASL contains phonology, morphology, semantics, syntax and pragmatics just like spoken language. It is a manual language or visual language in that it is not with combinations of sounds but with combinations of handshapes, palm orientations, movements of the hands, arms and body, location in relation to the body, and facial expressions that information is experienced. It was developed for deaf people but today it is used across all groups with communication challenges (www.wikipedia.org).

Another form of sign language is the Kenyan sign language which is the language of the deaf community in Kenya. A manual alphabet exists mainly from the American Sign Language manual alphabet. However the British manual alphabet was used in the early years(www.en.wikipedia.org). ASL and KSL were both started to help the deaf communicate but their use has been extended to other groups with communication challenges like autism.

Although ASL is the system the autistic children in this study have been trained in, they show their own idiosyncratic ways of signing. For each child therefore, teachers have
designed a manual containing the idiosyncratic signs the children use. The administrator interviews parents of autistic children on admission to establish how each child communicates. Teachers read the reports from such interviews and use the information to encourage the children to use their individual ways of communication. Such idiosyncratic ways of communication are used to tailor make therapies for each child. Furthermore, these ways guide teachers in understanding the communicative intentions of the children in their care. For example, one child continuously banged on the desk when he didn't want to stop doing something. The banging indicated that he meant *wait* (see appendix 5). Teachers reinforced appropriate behaviour of communicating the concept of wait.

Teachers taught and used some conventional signs like *thank you, good, bad, finished* and *more*. These signs are provided in appendix 1. As the teachers sign, they utter the words that match the meaning of the signs. It was observed that the teachers gave the sign for *finished* as they uttered the word ‘*finished*’ when they wanted to transition from one activity to another like when time for break was over. This is illustrated in figure 4.4 below.

Figure 4.4: Sign for finished.

![Sign for finished](image)

This sign was made by placing the hands open in front of the user and then twisting the hands to face the person to whom the sign was intended.

The sign below was also used to say “thank you”.
It was noted that learners are encouraged to use signs. Teachers noted that at the entry level all autistic children show their own signs but after the commencement of therapy when they will have been exposed to sign language, both verbal and mute children begin to use the conventional signs appropriately. For example, verbal children manage to use the signs alongside words. They also show ability to execute commands given to them by teachers through signing and they communicate their intentions using sign language. For example, a teacher would use the sign for *bad* to stop children from fighting and the children would respond appropriately.
The gestural system involves the use of body language to convey meaning. Body and hand movements are ways teachers use to communicate to the children in class, during meal times and at the dining hall. They are used alongside words; for example, teachers in this study shook their heads so as to express negativity or nodded to express positivity. They also employed facial expressions like frowning to discourage undesirable behaviour and smiled to encourage positive behaviour.

The teachers reported that the gestural system as a therapy is effective because the autistic children they handle acquire confidence and can initiate or sustain communication with teachers and their peers. However, it was observed during data collection that not all the respondents used gestures as expected. Some verbal and non-verbal children did not progress well in using these signs within the period of research. For example, when a teacher is discouraging fighting through shaking the head, some children would completely ignore this sign. It is possible that according to the motor theory autistic children studied have difficulties in fine motor skills. These children showed evidence of motor difficulties as some gesticulated poorly while a few approximated the sign language or continued to use their own ways of signing. Many of them managed to sign appropriately after this therapy was applied. The improvement in using signs by many children in this study is evidence that augmentative and alternative communication is effective.

It was observed that augmentative and alternative communication was used on a daily basis in and outside the classroom. Teachers emphasized that autistic children under this study use sign language at all times and also encouraged the verbal children to match signs with the appropriate words. The other forms of augmentative and alternative communication were used though not in a structured way but as need arose. For example, if a child started to bang
desks when sign language was being taught, a teacher would use facial expressions like frowning to indicate to the child that banging was undesirable.

4.1.2 Realia and Picturial System of Teaching Language.

Realia are real objects teachers use as aids in teaching autistic children. In this study, teachers used various objects (e.g. cups, packets of chalk, radio) to communicate with the children. Likewise, children brought along their “ritualistic” objects like jackets, head scuffs and shoe brushes which they used to communicate their intentions to the teachers and peers. It was noted that such children brought items from home such as small boxes, combs, tooth brushes, hats and wrist watches. Other children used items that were available within the school environment that suit their communicative intentions. For example, they would carry a cup when they wanted to drink water or they would point at their clean or shiny shoes to receive complements. One held a door knob whenever he wanted to go to the toilet. The teachers and other caregivers knew these types of communication and they responded appropriately. For example when a child held a door knob, the teachers let their assistants escort the child to the toilet. It was observed that even verbal children showed problems of self expressions and be understood. Using realia helped teachers understand the communicative intentions of these children. It was reported that understanding the needs of the children made them less frustrated and the rest of the activities were carried out smoothly.

Andy Bondy and Liny Frost developed picture exchange communication (PECS) in 1994. This is a mode of teaching language using pictures. Many people with autism communicate using picture cards. Whether cut from magazines, printed out from CD’s, or purchased as a set, picture cards offer autistic individuals the ability to communicate needs, desires, and even ideas without the need for spoken language. Since many people on the autism spectrum tend
to learn visually, it makes good sense to communicate with images. Just as they are important, images are a universal means of communication and they are just as easily understood by strangers or young peers as by parents or therapists (Miline, 1995).

Picture exchange communication was widely used by the teachers at City Primary School. In this technique, picture books, simple drawings and photographs were used. Children also communicated their wants, made requests and started conversation through the use of pictures. For instance, a child would lift a picture of a child playing out in the field to signify that he or she wanted to go and play. The teacher in charge would ask the child if she wanted to play and the child would agree. They were only able to do this after intense training from the teachers. The teachers created interesting stories which caught the children’s attention using picture books and jig- saws. They let the children use picture books to retell stories. Later on, the verbal children created their own stories using the pictures. The non-verbal children used the pictures to initiate and maintain communication by showing the relevant pictures to the teachers.

In this technique, teachers also showed pictures to learners and made sentences about those pictures. The learners repeated the sentences and the teachers asked questions such as, “What do you want?” or “What is this?” while holding a picture of an item like a pen, a glass or a chair.

The learners answered depending on the pictures the teachers were holding. The children would answer “a bag” or “a car” or “this is a teacher.” Appendix 7a is an illustration of picture symbols used for this purpose. With continued daily use of pictures, the children were able to construct simple sentences such as “the teacher is in class or this is a table” whenever they were shown a picture of a teacher or of a table. They were also trained to initiate
communication by holding different pictures and showing them to the teachers and other caregivers. For example, a child would carry the picture of a book to indicate that he/she wanted to read a story or lift a picture of a cup to signify thirst or hunger.

Teachers also trained autistic children to make letters of the alphabet. Through modeling, they learned to make and write the alphabetical letters which they then joined to form simple words. Appendix 7c(viii) shows a photograph of a child joining letters to make words.

For non verbal children, picture exchange communication is used to initiate communication and teach discrimination of symbols. The verbal children were taught to comment on things and answer direct questions. For example, a picture would be shown to the children and they would be asked to say something about it. A teacher lifted a picture and asked:

"What is this"?

The children chosen would, in turn, give responses such as, 'It is a book' or 'That is a box'.

It was observed that autistic children learn nouns and concrete things like chair or computer more easily rather than abstract things like honesty and respect. According to Howlin and Rutter (1987), autistic children find differing degrees of difficulty in learning words belonging to different grammatical categories. Nouns are the easiest to teach and are easily demonstrated. Concrete verbs can be taught fairly easily too, since most of them can be acted. The same can be done with words such as 'under', 'over', 'behind', 'in front', 'top', 'bottom', 'long' and 'short'. The difficulty is with abstract words like 'honesty', 'beauty' and function words such as 'to', 'for', 'or', 'unless', 'until', 'while' and 'as'. Howlin and Rutter continue to state that even a child who has learnt to speak fairly well may ask what 'and' or 'the' means. 'Who', 'what', 'why', 'where', 'when', 'how', 'which', are difficult to teach. Most autistic
children learn the word 'No' long before 'Yes'. An autistic child who is not echolalic will still have trouble with pronouns. This often leads to reversals: 'you' instead of 'I'. In spite, or perhaps because of, their language handicap these children are very interested in words. The same propositions were reported by the teachers under this study. They said that autistic children under their care showed profound problems using pronouns in which they used you or her when they meant I.

It was observed that this technique started with teaching children to exchange pictures or real items with teachers and peers who honoured the request. Most respondents in this study learned to spontaneously request for desired items and verbal children learned to construct simple sentences like:

*I want that green ball.* (Showing a picture of a ball.)

*Please give me some water.* (Lifting a glass of water.)

As a result of using PECs in the different ways stated above, autistic children under this study showed a steady improvement in their communication using both verbal and non-verbal cues.

4.1.3 Writing

Children with autism have great difficulty communicating their thoughts and feelings verbally and this can extend to their writing. Writing can be used as an intervention which starts with helping children to hold a pen and putting marks on a surface. A teacher holds a child’s hand as the child holds a pen. The teacher’s hand directs the child’s hand and the pen makes contact with the surface. Subsequently, they are given a series of letters to practice on before progressing to writing ideas. Teachers reported that some children are able to communicate by writing down their wants, which would otherwise be difficult to express in
speech. In this study, writing refers to the mechanical act of holding a pen and putting a mark on a surface.

Teachers reported that teaching learners to write is a therapy they utilize. Each child is required to buy text books that encourage practice on hand writing and numeracy. It was observed that the mute respondents could write their names and other ideas when this intervention was given. Autistic children, both verbal and non-verbal consequently learn to communicate in written words, phrases and sentences as illustrated below.

Yesterday-word
A bad girl-phrase
The teacher is calling you.-sentence

It was noted that writing as a therapy is effective across the spectrum. Learning and being able to hold a writing instrument trains the child’s hand to be able to hold other objects including a cup or a tooth brush. According to the teachers, before this therapy was given, the children could not hold and use many objects like pens and spoons but after this therapy, all the respondents could use these objects well. According to Doman (1974), there should be emphasis on improving the autistic child’s motor abilities particularly when it comes to writing.

It was observed that writing as an intervention did not stop at the motor level (i.e. holding the pen and scribbling). It extended to helping the children under the study to write simple words, phrases and sentences. A few managed to write short stories with disjointed grammar and contained information that was hard to comprehend. However, these stories could be interpreted within a given context by probing the responsible child to provide more information. This therapy is a form of facilitated communication that is discussed below.
4.1.4 Facilitated Communication

Bilken (1991) notes that facilitated communication is a technique developed during the 1970s by Rosemary Crossley. Initially used primarily with individuals with cerebral palsy and motor disorders, this technique has recently become increasingly in the treatment of communication disorders among children with autism.

It was observed that facilitated communication is used on autistic children under study in a number of ways. During a lesson, a teacher would put pressure on the child’s hands and wrists to enable the child to hold the pen in order to write. This was helpful when they were required to write and perform other motor related tasks like using a spoon and tying shoe laces.

Another strategy under this technique that teachers used was nodding as the children struggled to speak to encourage them to finish what they were saying. The teachers explained that this provides emotional support and the children are able to communicate their ideas, desires and feelings. Below are examples of expressions used by the children. Teachers encouraged them to verbalize them during class sessions.

Child: “I want to run today.”
Teacher: Nodding to show acceptance.
Child: “I am sick.”
Teacher: “Sorry, you will be fine.”
Child: “I am not eating.”
Teacher: “You must eat.”

Thirdly, facilitated communication also involves talking to autistic children as if they were talking to normal children. The teachers created role play between themselves and the children. For example, introducing a shopping event and asking the children to talk about what they wished to buy. Another communicative context used was to verbalize as the
teachers employed sign language. When they wanted to discourage a bad behavior, they would say *no* and use the corresponding sign. For example, if a child started to bang tables, teachers would discourage him by saying 'bad' as they used the sign for bad.

Fourthly, teachers paid attention to the communication skills autistic children have. For example, there are children who communicate better using sign language, while others draw what they want to communicate. Laying emphasis on such specific skills guides teachers to know how to help each child using facilitated communication. This is because there are profound differences in the way autistic children communicate and this makes it difficult for them to be understood. For example, when they want to communicate in most cases, some just grunt, others use signs while others use words inappropriately. It was observed that all autistic children (verbal and non-verbal) in this study sample have ways of communicating. Some just pointed at objects while others used pictures to initiate communication or make requests. It was seen that if a child communicated better using pictures, teachers emphasized this and provided more pictures in order to expand the child’s vocabulary. The verbal children’s language was frequently corrected to ensure they uttered the correct words relating to proper contexts. For instance, a child would say *let’s pray* at break time and the teacher present would say, *we’ll pray when we go to eat.*

Peer mentoring is a sub technique under facilitated communication where non-autistic children are used to form interactions with autistic children. It was observed to be in use by the children in the normal school section. These children interacted with autistic children as the former group reinforced appropriate behavior such as sharing, helping and giving affection. Such expressions such as "*please, give me*" "*may I see your watch?*" "*sorry*" were reinforced. During play sessions, autistic children were put together with normal children.
Facilitated communication helped to advance the writing skills they had acquired in the preceding therapy. It was seen that they were able to go beyond the mechanical act of copying words to writing down their wants and desires like when a child wanted to have a break after a long time in class. Facilitated communication makes autistic children worthy communication partners with the teachers. Since teachers treated them as normal children and addressed them as such, majority appeared interested and their attention seemed to improve when involved in various activities like writing and singing. The mute children also showed tremendous improvement on their general communication. Using the children from the normal section as communication peers was seen to be rewarding since the normal children engaged autistic children in play activities and communicated with them.

4.1.5 Music Therapy and Social Scripts

Music therapy is effective in the development and remediation of speech. It is the use of music to remedy the poor aspects of communication among autistic children like poor intonation, lack of stress patterns and poor or lack of verbalization. The severe deficit in communication observed among autistic children include expressive speech which is used inappropriately (Staum, 2002). Since many autistic children may be able to sing but not speak, teachers can work systematically on speech through vocal music activities. For example, they can use songs with simple words (bird, chair), repetitive phrases and even repetitive nonsense syllables to improve autistic children's language. Meaningful words and phrases and songs presented in visual cues can facilitate this process further (Kluth, 2002).
Appendix 2b gives such an example of an action song used by the teachers in this study. Teachers used the song to teach actions like eating, brushing the teeth and playing. The songs were stimulating and attention catching as illustrated below;

*Gong gong gong* as teachers knocked the fists together and prompted the children to follow during music sessions.

*zig zig zig* as teachers sawed the hands against each other and let the children do the same during these sessions.

In this study, teachers composed songs which helped the children to communicate. The songs usually described an action. Once the children learned the song, the teacher left out words and waited for the children to fill them in.

Below is an example of an action song and how it was sang by teachers of autistic children during music sessions.

Round and round the garden  
Like a teddy bear  
One step, two steps  
Tickle you under there

Teacher: Round and round ____________________________  
Children: Round and round the garden  
Teacher: Like a ____________________________  
Children: Like a teddy bear  
Teacher: One step, two ____________________________  
Children: one step two steps  
All: Tickle you under there

It was seen that only verbal children in this study sample vocalized words as they sang while the mute children only hummed. Teachers reported that this therapy worked best with the verbal children although they also asserted that music provides enjoyment and auditory stimulation to all the children hence making learning interesting to them.
Social scripts are stories that depict a particular social skill being acted out (modelled). They are descriptions of social situations that include social cues and appropriate responses. Teachers wrote and told these stories for specific situations for the children. Children under this study are not able to coherently tell stories or describe situations that have occurred. These stories were designed to prepare children for upcoming changes of routine or to learn appropriate social interactions for situations they encountered. They were written or told from the perspective of the children. Teachers described a situation which occurred and wrote it for individual children taking into consideration the matching comprehension levels. For non-reading students the story was recorded on a cassette tape and they were taught to listen to the story on a daily basis. Teachers often told social stories they had written that described a situation from the child’s perspective (see appendix 2a). Teachers read the stories two or more times depending on the ability of the child. Symbols, drawings or photographs were included in the story to support the meaning for the children. Non-readers listened to stories on cassettes. The children read the story back and were instructed to read that story daily.

Key social rules like greeting people, asking for permission and following instructions were used to teach social skills. Vocabulary related to these rules such as ‘good morning’ and ‘excuse me’ were reinforced. Teachers said that they teach key social rules associated with specific situations and which aim at making autistic children adapt to social contexts like greeting people when they meet them and asking for permission when they want to use another person’s belongings.

Concepts such as waiting are abstract and not easily understood by autistic children. Visual cues like objects, pictures and written words are therefore used to provide concrete
information for these abstract concepts to be understood. For example, a picture of people standing in a queue to be served would be shown to teach the concept of waiting.

Several types of sentences are used as a way of drilling to make the children communicate better. First, we have descriptive sentences which are sentences giving “who” “what” and “where” details about a situation. They are meant to provide information on the setting, activity and people involved. From a story, such sentences were meant to make the children recognize that the situation actually occurred. This is an example of a descriptive sentence that was extracted from a story. “The ball had just gone over the head of one of the boys.” (C.f. appendix 2a, paragraph 3)

Second, there are directive sentences which are positive statements about desired responses for a given situation. They are employed because they teach the children appropriate social responses in a given situation. For example, ‘I’m so sorry you are feeling bad’ (c.f appendix 2a, paragraph 16).’ The teachers created contexts like a bus stage and told a student to ask how much money she will pay in a bus. If the fare is too high, the teacher asked the child to negotiate and say, for instance, that is too much for me.

Third are perspective statements that provide a description of the possible reactions of others. These types of sentences are used to describe the children’s possible responses or feeling towards a particular situation. The theory of mind blindness states that most autistic children do not have the understanding of different situations and that they can react differently in the same situation. The use of expressions such as I’m sorry if I startled you but I cannot take it anymore’ (c.f. appendix 2a, paragraph 14) can help them approach different situations
appropriately. When they arrive at the supermarket, instead of picking only one thing that they are used to like a cup of a particular colour, they can pick different items.

Fourth, there are affirmative sentences which are used and are aimed at giving the children a sense of what others might be thinking or feeling in particular circumstances. It should be noted that the theory of mind blindness stated that autistic children have no sense of the fact that other people might have opinions, feelings and thoughts. These types of sentences are aimed at building this awareness that the children lack. Expressions such as ‘excuse me’ (c.f. appendix 2a, paragraph 13) were used.

Finally, co-operative sentences which describe how other people help out in particular situations. These were aimed at creating awareness among the children to learn that they need other peoples’ help and that they are required to help. Ways of approaching people in various situations were taught and emphasized. The examples included, “my mother will get the book for me”, “could you please help me arrange this table”, “Don’t worry, now you can get the rest you need to feel better” (c.f. appendix 2a, paragraph 18).

These stories were written and told in the first person, present tense. They were written from the children’s point of view using simple vocabulary and comprehension at the children’s level. They were role played where children were assigned active roles. For example, some acted as buyers and others as sellers. Six verbal respondents could retell the stories while the rest could repeat isolated sentences.
4.1.6 Occupational Therapy

Occupational therapy is skilled treatment that helps individuals achieve independence since autistic children lack some of the basic social and personal skills required for independent living. Occupational therapy is important in that it may be used to focus on the physical articulators that need to be working in order to enable the child to produce speech. According to Menyuk (1978), autistic children can produce speech when proper motivation is given.

In this study, occupational therapy was intended to connect motor movement of the mouth and the face and to provide motivation to speak, especially for the mute children. It also involved rigorous physical exercise like jumping and press ups which were aimed at decreasing stereotypic behaviour like hyperactivity, aggression, self-injury and destruction. These behaviours were said to cause poor communication and their elimination or amelioration was important for communication to improve.

Physiotherapy or occupational therapy also dealt with strengthening fine motor skills like writing for the children. It was used to facilitate play activities that instructed children as well as aided them in interacting and communicating with others. Through this therapy, strategies were devised to help the children transition from one setting to another like from classroom to play ground or from one person to another like from one peer to the teacher. This therapy also focused on sensory integration, the sensory system is broken up into three main areas: tactile, vestibular, and proprioceptive. The tactile system is the sense of touch. The vestibular system is responsible for movement and the body's position in space. The proprioceptive system deals with muscles and joints. It was observed that the occupational therapists concentrated on improving these three areas of the sensory system using various apparatus as will be discussed below.
In the setting under discussion, this therapy was called physiotherapy because it emphasized on physical contact between the therapists and the children. It was an effective therapy to autistic children especially when they got violent. Touching, massage, swinging and bouncing on special apparatus were ways occupational therapists employed. After the application of these therapies, autistic children calmed down. They then communicated and teachers could carry out their intervention duties effectively. It is their nature to show violence and throw tantrums especially when attempts are made to alter their routines. For any interventions to take place, these negative behaviour has to be eliminated first. It was observed that when they are calm, they are able to remember what they have been taught and they can communicate and interact meaningfully.

There is a special room for physiotherapy which is equipped with facilities that are used in different ways to help autistic children communicate. These apparatus and their utilization are discussed below.

One of these apparatus is the trampoline which helps to improve the coordination of different muscles and the brain (appendix 7c, iii) and is used during occupational therapy sessions. It was reported that majority of the autistic children under study have a phobia for heights. Under the supervision of the therapist, the children were made to jump several times on the trampoline. It was observed that it helps in getting them used to heights hence building their confidence, thereby improving their communication. When the children became confident, it was apparent through observation that they could approach play mates, teachers and other care givers to initiate communication.
Another facility in the physiotherapy room is the vestibulator which helps in enhancing and restoring body balance (equilibrium) since autistic children have a problem with the vestibular system. To achieve this, the children were spun around in a net swing—a net swing cocoons the children providing them with proprioceptive input. At the same time, the spinning gives vestibular input. Lack of balance affects language production and when it is restored, communication improves. Use of the vestibulator in this study was a daily therapy. It was used to ensure children could produce language and hence communicate better.

Yet another facility is a therapeutic or bosu ball which is used to help the children develop fine motor skills like tactile, vestibulator and proprioceptive skills. This is done by pushing the ball towards them and letting them hold it. A weighted ball is often used providing proprioceptive input when the ball is caught. The ball also has a rough texture which allows for different tactile sensations. The act of balancing on the bosu ball works the vestibular system and helps in training the delayed milestones. The occupational therapists pushed the ball towards the children who passed it back and were made to roll on it. Teachers and physiotherapists reported that at the onset, most of children could not hold pens and write but after this therapy the children could communicate their wants and intentions through writing.

In the therapy room, there is also a three sided mirror which is aimed at helping autistic children develop own and peer awareness. When they see an image of themselves in the mirror, they think that the images are of other people. With time, they learn that the images are their own. It was observed that as they stand in front of the mirror, the therapists help them point at their images saying “that is me” “I am standing in front of the mirror.” Uttering
these statements helps to correct “I – you” pronoun reversal. The motor theory points out that pronouns are directly derived from deictic gestures. The pronouns were associated with these gestures. It was reported that it is very important that the child is encouraged to point, to himself or to others or to things. Associate pointing (forming the child’s arm position) with the pronouns: YOU with pointing to someone else and ME with the hand pointing to the child’s chest was a helpful tool aimed at correcting the pronoun reversal.

These children do not understand how the figure of a person is. It was reported that at the start of the therapies, they were told to draw a person and the majority made drawings of people upside down but after continued therapy, most drew an upright figure. Some drew one side of a person with half a face, one hand and one leg. Facing the mirror helps them know the real figure of a person. The therapists also uttered such expressions as: “I have two hands,” “I have two eyes”, “I have two legs”, “I have one nose” which were then echoed by the children. These expressions helped the children name their body parts (legs, hands, eyes, ears among others) hence their vocabulary was expanded.

The rocker (see – saw) is yet another facility in the therapy room. It is used to rock the children for them to calm down in order to receive instructions. Some autistic children have severe impairments and when they started to bang things, cried or got violent, the rocker helped to calm them down. This impacted positively on their communication because they were able to take instructions and execute any given command.

After occupational therapy sessions were done, the children sang action songs. They got to learn various activities and their terminologies from the action songs. Both verbal and non-verbal children were encouraged to write down any vocabulary they came across. In this
room, there is a television set, a radio, VCDs, magazines and picture books. They sang along with the music. There are jig saw books and children were encouraged to fit the fragmented jigsaws. These consisted of animals, forests, and people among other things. Teachers pointed out that the jigsaws help children learn various nouns like elephant, zebra, and birds. Besides teaching nouns, the jigsaws improve the children's imagination, and recognition of pictures as well as their ability to correctly name things. The use of jigsaws also develops their fine motor skills. Teachers pointed out that in order to improve the communication of autistic children, their imagination must be improved as well.

Another activity in the therapy room involved blowing bubbles (appendix 7c, ii and v). This helped the children in training the articulators to produce certain sounds. The act of blowing bubbles was intended to help production of speech sounds like bilabials in order to develop their speech. As they blew these bubbles, the therapists demonstrated how articulators such as the lips and the tongue work. This act also helped in training speech organs like the lips, the tongue and the glottis. This is in light of the motor theory where the link between basic motor programs and the patterning of articulation is of critical importance. There should be a systematic linking of bodily movement and the production and perception of speech sounds. They should be taught to correlate a pattern of arm movements with an ordered set of speech sounds. Speech sounds such as /m/, /t/ are focused on. For example, in training the /m/ sound the therapist says 'm' as he holds the child's lips until the child vocalizes it. The physical prompt is gradually withdrawn from the child's mouth until the child emits /m/ sound following the therapist's verbal stimulus without the physical prompt. Once the child has mastered the initial sound, a new sound like /t/ is introduced. This method is effective because it was reported and observed that all the respondents produce the target sounds.
However, the non-verbal children only show mouth movement without verbalizing the sounds.

There are also puzzles of different colours and they are attention catching. Alongside the puzzles are puzzle boards and pegs. The children were made to fit them to form various words on the boards and different shapes which they named (e.g. triangle, circle, rectangle and star). They were aimed at developing fine motor skills as well as expanding the vocabulary of the children. Therapists also had crosswords containing simple words and the children were made to find and circle the words (appendix 2c). They also aided in discrimination of colours. As they used the puzzles, their imagination and their communication competencies seemed to improve.

It was noted that even though occupational therapy predominantly falls under linguistic therapy, it is also used as an educational therapy.

4.2 EDUCATIONAL INTERVENTIONS.

When autistic children are put in formal settings like to school, various educational approaches are used to make them fit in the company of normal children. Educational interventions include the teaching methods or strategies employed by teachers of autistic children in the unit. In this study, a variety of educational interventions were adopted that in a way overlapped with linguistic interventions. The following interventions are used: visual approaches, functional communication teaching, and miller teaching and social skills education. As noted earlier, occupational therapy is used as an educational therapy especially in dealing with maladaptive behavior. The key intention of the therapies is to modify the maladaptive behaviour of autistic children as well as improve their communication.
4.2.1 Visual Approaches

Many individuals with autism are visual learners. For this reason, visual teaching methods are often incorporated into a multi sensory approach to learning. For instance, a speech pathologist may teach language and communication skills by using verbal language and sign language simultaneously. Reinforcing a verbal cue with a visual one in this manner can create a mental association that will make that information easier to absorb and recall. Using picture or text cards, videos, models, computers, and augmentative picture communication cards can make this same verbal-visual connection (Kluth, 2001).

Autistic children have strength in concrete thinking, rote memory and understanding of visual-spatial relationship but have weaknesses in abstract thinking, social cognition and communication and attention (Rimland, 2000). With these factors in mind, teachers at City Primary School used pictographic and written cues to help autistic children understand and communicate. For example, every activity that took place was guided by brief notices that were pasted on each child's desk.

Daily classroom activities, eating and social schedules were organized with visual objects (see appendix 7b). For example, teachers have a flash card with the day and the date stating the sequence of that day's activities. Visual aids consist of colour photographs, colour pictures, black and white pictures, drawings written messages and real objects. The visual symbols provided directions for the children like class assignment, specific tasks and activities and written instructions for learning new information. Teachers labelled objects, containers, charts and other items as shown in figure 4.6 below and in appendix 7a. This was intended to help the children understand the organization of the environment. The teachers reported that visual aids are preferred because children can use them as long as they need them to process information for reading or listening purposes.
Often autistic children show fixation on an object or a topic. For example, the higher functioning autistic children talk about a favourite TV programme while the mute hold an object like a match box. Teachers used the fixation to teach various concepts like time, naming and personal hygiene. Teachers pointed out that talents and interests are developed because they notice strengths of autistic children in specific areas (e.g. music, graphics, art, poetry). Three of the children under study could draw well as shown in figure 4.7 and three others sang well. This strategy helped provide enjoyment as well as develop delayed skills such as communication and socialization.
Tasks were broken into component parts which were taught separately. Teachers broke down complex tasks and reinforced them in small, teachable steps. For example, when teaching a skill such as brushing the teeth, the task was broken into sub skills: getting the tooth brush and tooth paste, turning on the water tap and putting the toothpaste into the toothbrush. Vocabularies related to these tasks were taught. Reinforcers were carefully used such as material gifts or praise for the children who exhibited the desired behaviour. This is called structural teaching.

4.2.2 Functional Communication Teaching

One of the fundamental goals of schooling is that children acquire the skills they need to function independently. Functional communication teaching was developed by the American Psychology Association in 2000 and it was aimed at developing academic and social skills of children with special needs (Rodier, 2000)
In this study, this teaching strategy is aimed at expanding communication skills of autistic children. Expanding communication skills of autistic children is seen to be a great challenge. This is because autistic children have not developed the skills they need for spontaneous communication so that they can interact socially, share information and express emotions.

Under this strategy, functional language skills were taught in the social context where they were likely to be used. Teachers focused on developing interaction and communication in the environment in which the children participate through providing real time language (i.e. language they are likely to encounter in real time situations). For example, vocabulary related to transport (bus fare, terminus), dining hall (eating, cleaning), playground (ball, skipping rope), classroom (desk, books, pens) and home (television, mother, kitchen) were taught. Vocabularies items at the level of the children’s comprehension were taught using a visually based approach where pictures, drawings and photographs were used. The teachers got these pictures from newspaper cuttings or bought them.

Listening is a language skill which includes drawing the speaker’s attention, paying attention, and processing what has been heard. Autistic children were taught to listen and this skill was broken down into components like facing the speaker, looking at one spot and placing hands in a planned position. It was observed that occupational therapy had to take place for the children to listen properly. Without the physiotherapy sessions, the children were easily distracted and teaching listening was almost not successful.

Teachers focused on teaching the children to listen to spoken or oral language and respond appropriately. Oral language comprehension was taught through the use of visual input
because visual aids help catch and maintain the children’s attention. Teachers used photographs to support the understanding of the content of oral language communication.

According to Kluth (2002), many students use reading to support oral language rather than the expected reverse where children use oral language to support reading. This was observed among autistic children studied. Teachers teach the children that everything in the world has a name including the visual aids they use. They also teach that there are different ways of saying the same thing and that some words can be meaningful in a variety of contexts. For example, the word 'bright' can mean either something shiny or an intelligent person.

They created contexts that taught different types of expressions like requests (e.g. for food, toys; 'Please show me your toy.'), negation (e.g. refusing, food, protesting when asked to do something; 'I do not want to eat now.'), indicating when the children wanted to stop doing something ('Help me put my books away because I have finished my homework) and commenting (e.g. labeling pictures in books, objects from a shelf; 'this is a bottle or this bottle contains medicine).

One skill that was emphasized with this method was conversation. Conversation involves exchanging communication through speech supported by non-verbal cues. The teachers pointed out that autistic children have difficulty with the pragmatics of communication interpretation – the use of language in social situations. Three children have good vocabulary and appeared to have a good command of language but they seemed to have a restricted understanding of social and conversational interactions. For example, one respondent used the sentence below to catch the attention of teachers but when they responded, he kept quiet.

These children are pretty but irresponsible.
Conversation skills were taught and various methods used to achieve this end. Structural teaching is used to develop the oral language needed for social and communication play. Structural opportunities like modeling, physical prompts, visual aids and reinforcement were provided in order to facilitate attention. Teachers also used simple drawings to illustrate what people said or did and to emphasize the emotions portrayed like sadness, surprise and excitement. This therapy was aimed at improving socialization skills and putting emotion to what children communicated about which was otherwise empty in the initial phases. It was seen that most of the children under this study began to attach emotion to their speech and communication.

Symbolic drawings, which represent real conversations, were used to illustrate basic conversation concepts like listening, interrupting, commenting and using non-verbal cues. Drawings of people engaging in conversations were shown to the children where these people could be arguing, sitting in a circle or standing in a crowd as shown in figure 4.8 below. Non-verbal features like gestures, facial expressions were also emphasized. This was meant to make the children aware that there are other correct forms of communication apart from speech. Their idiosyncratic ways of signing came into interplay with these forms of non-verbal communication. It was seen to be an effective therapy since it was not completely new and they were adjusted to make meaning to many people.

These conversational representations were stimulating to the children. Their attention span was enhanced and as this was continued, majority of the children under study could initiate and carry on conversations well. It was observed that this strategy was very effective.
Colours representing emotional contexts as well as pictures with scripts were used to develop conversation skills and communication appropriate to specific social contexts and situations as shown below.

**Figure 4.8: Conversation symbols**

<table>
<thead>
<tr>
<th><img src="image" alt="Conversation Symbols" /></th>
<th>Two grown ups talking, one is surprised and the other is smiling</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Group Discussion" /></td>
<td>A group discussion with a lead speaker gesturing as others look on and contribute.</td>
</tr>
<tr>
<td><img src="image" alt="Children Telephone" /></td>
<td>Children talking on the telephone</td>
</tr>
</tbody>
</table>

### 4.2.3 Miller Teaching

This method was developed by Arnold Miller and Eileen Miller (1973). The Miller Method addresses children's body organization, social interaction, and communication and representation issues in classroom settings. Cognitive-developmental (c-d) systems theory assumes that typical development depends on the ability of the children to form systems -- organized "chunks" of behavior -- that are initially repetitive and circular but which become expanded and complicated as the children develop. Becoming aware of the distinction
between themselves and their immediate surroundings, children's systems, previously triggered only by salient properties of the environment, gradually come under their control. Children then combine their systems in new ways that permit problem solving, social exchanges and communication with themselves and others about the world.

In contrast, developmentally challenged children become stalled at early stages of development and progress to more advanced stages in an incomplete or distorted fashion. Many on the autism spectrum present impairments in the ability to react to and influence the world. Lacking a sense of the body in relation to the world, salient stimuli drive them into scattered or stereotypic behavior from which, unassisted, they cannot extricate themselves. This results in aberrant systems involving people and/or objects as well as a "hardening" of transitory formations found in normal development, e.g., hand inspection and twiddling or intense object preoccupation. The miller method involves utilizing naturalistic procedures which is a form of teaching that resembles the manner in which developing children naturally acquire language.

Teachers at City Primary School teach linguistic items during natural play interactions. Grammatical structures like nouns, verbs and pronouns were taught in real contexts. For example, during meal times, teachers deliberately asked children what they were holding or what food they were eating. They named items like plates, spoons and food items like rice and oranges.

They reported that children learn more rapidly when the interventions are similar to those of their natural environment (i.e. an activity that the children selected than that selected by the
teacher). When their interests are catered for, they successfully learn to name (a car, my doll) and use action words (eating, brushing).

It was observed that positive and negative reinforcements were employed during class sessions. Any communication attempts are rewarded by the teachers through praising or giving a token. Children with severe communication problems who are able to produce correct speech are rewarded using positive words like “good” or “you are bright”. Those who produced undesired language are punished or are reinforced negatively, for example, by telling them, 'that is not correct'.

Therapists and teachers also use self-initiated strategies to provide language interventions and expand the children’s communicative abilities. The following strategies were employed.

To teach “what is that” – the first question teachers posed to learners is “what is that?” This was in order to increase the vocabulary through naming various things. Following this intervention, autistic children showed a dramatic increase in vocabulary and vocabulary usage as reported by teachers. Items which children like and those that were available in the environment were named: favourite food, favourite toys, bags and books. The children were then asked to repeat the nouns as other items were subsequently exhibited and named.

Another strategy under miller teaching involved teaching “where is it?”. Here, the children’s favourite items are hidden in specific locations. Prepositions such as on, in, under, on top and behind were used. The children are prompted to ask “where is it”. This strategy was employed in this study where teachers provided answers to the questions they had asked the children. The children were prompted to repeat the prepositions before they were permitted to
take the items. Such answers as "it is under the table" "the book is on top of the television", were given.

To teach autistic children to ask the question using 'whose", their teachers used items which were associated with particular children in the classroom. The children were prompted to provide answers to this question. A child's favourite item was used to teach the difference between "yours" and "mine". This is because autistic children have difficulty mastering the difference between these two possessive forms.

4.2.4 Social Skills Education

Most children with autism would like to be part of the social world around them. They have a need to interact socially and be involved with others. However, one of the defining characteristics of autistic children is impairment in social interactions and social skills (Matson, 1994). Therefore, social skill development is an essential curriculum area for autistic children. It is a crucial component of any intervention plan for changing problematic behavior. In this study, teachers ensured that children have the opportunity to participate and interact in a variety of natural environments such as the playground, the dining room, and home. This is because in these environments, appropriate models, natural cues and stimuli and functional reinforcers are available. There are a variety of authentic practices for supporting children with autism in developing social skills.

Turn taking is a salient skill in conversations. It involves waiting for one's turn in order to speak, interjecting or pausing to receive reactions from the interlocutors involved. Teachers teach turn taking skills through the use of social stories which are accompanied by pictures. These pictures show people talking to each other (e.g., a child requesting to go out and a
teacher giving permission to that child). Consequently, the verbal children learned to wait for their turns in conversations. The mute children could be seen gazing at the teachers when they were spoken to. They were also able to execute the commands given. An assumption was made that this act was a turn taking skill.

Transitioning from one activity to the other, from one topic to the other is taught by the use of social stories and symbols. Changing the topic in conversation is taught because autistic children can stay on one topic and refuse to talk about anything else, a behaviour teachers call preservation. Visual cues, established time limits and setting a time and place to engage in a favourite topic are helpful in teaching students to end or change the topic.

The concept of finishing is taught to autistic children through the use of environmental cues such as observing and following the behaviour of other children and adults. A timer would be used after sometime to indicate that teaching or physiotherapy sessions were over.

Since autistic children have impaired social development, they are not able to initiate communication well as supported by the theory of mind blindness. It is therefore important to teach initiating as a communication skill. To teach initiating, teachers at City Primary School combined social stories with photographs or pictures to teach how autistic children should approach others, ask for something, get into a game or greet someone.

Finally, cognitive picture rehearsals, which are pictures of behaviour with an accompanying script, were used to teach social skills where information was presented in visual form. Sequences of behaviour in the form of picture with an accompanying script were used and the children were guided through practice of sequence of behavior as shown in the figure below.
Teachers also used books with pictures and descriptions of certain behavior (see figure 4.9). It was observed that these children did not automatically behave as expected unless the picture rehearsals were used repeatedly. For example, if the teacher wanted to reinforce a desirable act like raising hands when asking or answering a question, table manners, rules of conversation, she had to use a cognitive picture rehearsal up to ten times.

Figure 4.9: Cognitive picture rehearsals

<table>
<thead>
<tr>
<th>A woman eating an orange while observing table etiquette.</th>
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<td>A family sharing a meal while communicating using non verbal cues.</td>
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4.3 Summary

This chapter has dealt with the linguistic and educational therapies given to autistic children at City Primary School. The linguistic therapies include: augmentative and alternative communication, realia and pictorial system of teaching language, writing, facilitated communication, music therapy and social scripts and finally occupational therapy. Educational therapy deals with visual approaches: functional communication, miller teaching
and social skills teaching. It has also dealt with the effects of the therapies in the communication of autistic children.

It has emerged that these therapies play a great role in improving the communication of autistic children. Augmentative and alternative communication adds to the way autistic children communicate and techniques like pointing, facial expressions, body movement, drawing and sign language were taught and reinforced where they were already in use. Real objects were used to teach various concepts and some children preferred to use them to initiate and sustain communication. Writing was taught and it aimed at improving fine motor skills of holding the pen and also helping children express themselves. Using a technique called facilitated communication; teachers also helped children to communicate by nodding as the children spoke and holding their wrists as they wrote. Teachers also composed and used action songs to help in teaching vocabulary in an interesting manner. Occupational therapy was used in various ways to help in improving the coordination of brain and muscles, enhancing vestibular and tactile systems as well as training the physical articulators.

On educational therapy, visual approaches were used to teach various concepts where a wide variety of pictures were used. Functional communication teaching aimed to reinforce concepts such as conversation and turn taking. Miller teaching was practiced in that the teachers utilized the natural environment to teach and reinforce ideas. Picture rehearsals were used with accompanying scripts to show the children how they should communicate in a variety of contexts.

The next chapter deals with the summary of findings, conclusions and recommendations of this study.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

5.0. Introduction

This chapter contains a summary of the findings and conclusions of the whole study with particular reference to research questions, research objectives and methodology. Recommendations and suggestions for further research are also given.

5.1 Summary of findings

The main objectives of the study were to identify and describe the educational and linguistic therapies given to autistic children in order to improve their communication. It was also to investigate the effects of these therapies on the communication of autistic children.

Several findings have emerged from the analysis of the data collected:

It is generally necessary to target specific language or communication skills for explicit instruction and to provide support for using the skills in social situations. Since unusual behaviour associated with autism is caused by other factors related to sensitivity to sensory stimulations like touch, the instruction plan should incorporate the following strategies:

Strategies for expanding autistic children's interests, understanding the children's responses to sensory stimuli and preparing them for planned changes.

Firstly, there are many forms of augmentative and alternative communication and all were employed in this study to improve communication, socialization and imagination abilities of autistic children. They include: writing, drawing, gesturing, body movement, pointing and facial expressions. Children were seen to use these ways to make their wants and desires known. Teachers on the other hand reinforced these ways by training the children to use them...
appropriately (i.e. in a way that they can be understood by all people). Autistic children under study showed their own idiosyncratic ways of communicating using signs and they were encouraged to do so. Teachers in respective classes learned how each child communicates and designed a manual to be used by all teachers and other people in the school. They also trained autistic children to use conventional signs like thank you and finished.

Some autistic children are non-verbal, others have a little language and yet others may have extensive language with deficits in the area of pragmatics. These children present language difficulties in the area of non-verbal communication: inappropriate facial expressions, unusual use of gestures, lack of eye contact and strange body posture. They show significant deficiencies in oral language (for those who develop language) with odd pitch or intonation, faster or slower rate than normal, unusual rhythm or stress and a monotone voice quality. All forms of augmentative and alternative communication were aimed at improving these qualities.

Secondly, writing was utilized. This is because it is a powerful tool of communication for autistic children with or without speech. Teaching autistic children how to write is important because it deals with two salient points: motor development and expressive language development. It commenced by training children to hold pens and scribble on surfaces and advanced to teaching the children to form letters, words, phrases, sentences and finally short paragraphs with comprehensible ideas.

The third therapy in use is facilitated communication which was used to strengthen communication abilities of autistic children through writing, speaking and using non-verbal cues. Teachers also paid attention to any communication skills the children exhibited and
strengthened them. It was noted that non-autistic children can be used to form useful interactions with autistic children under a technique called peer mentoring.

The fourth finding is that music therapy is effective in the development and remediation of speech and overall communication of autistic children. It works better with verbal children and also provides enjoyment and auditory stimulation to all groups of autistic children. Action songs were used to teach various occurrences and activities like raining and building respectively.

Social scripts can be used to teach key social rules like taking turns in conversations, greeting people and interrupting which are pertinent in successful communication. Social scripts can also help to improve imagination and language skills like writing, speaking, listening and reading among autistic children. In this study, teachers read stories to children who in turn read them. Later, some were able to tell their own stories.

Fifthly, occupation therapy helps individuals with autism achieve independence. It was aimed at improving tactile, vestibular and proprioceptive areas. Special apparatus like the trampoline, the vestibulator, the bosu ball and the rocker were used during physio-therapy sessions. This is a one on one approach and it requires a lot of time to achieve good results. It was seen that children under this study were able to take instructions after these sessions. It was also observed that non-verbal children managed to produce speech through training of the articulators.

In educational therapy, visual approaches were used. It was reported that autistic children show strength in concrete thinking but have problems with abstract thinking. Therefore, teachers used pictures and visual symbols to reinforce abstract ideas like waiting, time, and
honesty. Classroom daily and weekly schedules were posted on the classroom and dining hall walls for the children to follow.

The seventh finding is on functional communication teaching which is aimed at expanding communication skills of autistic children. Teachers focused on real time language and focused on contexts that are likely to occur in the environment of these children. Listening, conversation, speaking and non-verbal communication are the language skills this therapy focused on. It was observed that the way this therapy was presented brought about positive results because majority of the respondents acquired confidence and showed improvements in communication.

The next therapy is Miller teaching which involves giving interventions similar to those in the natural environment. This ensures the children’s interests are catered for, thus, making learning meaningful. For example, teachers taught language items during play and meal times.

Lastly, social skills education ensures that children participate and interact in a variety of natural environments like playground, dining room and school meetings. This is because appropriate models and natural cues are available in such environments. In this therapy, children under study were taught how to take turns in conversation, transitioning from one activity to another and using non-verbal language. Pictures of people engaging in conversations were used to teach these concepts.

For effectiveness, educational and linguistic therapies are given in combination. The study found out that this improves the communication of autistic children. A combination of these
therapies was used on individualized basis since the needs of autistic children are not quite the same. Some children were noted to revert to their challenges if continued intervention is not given. Extensive and continuous therapy is thus necessary.

5.3 Conclusions

It was concluded that linguistic and educational therapies are used together for effective intervention to take place. Educational therapies are aimed at correcting the maladjusted behaviour so that instruction can take place. On the other hand linguistic therapies are aimed at improving the language communication and socialization of the children; therefore, the main objectives of these therapies were to ensure children produced speech, initiated communication and sustained conversations.

It was also noted that some therapies are effective on some children while others are not. Some therapies like music therapy work better with verbal children while others like augmentative and alternative communication work better with mute children.

5.4 Recommendations

Based on the findings that emerged from this study first the autistic units countrywide should be provided with teachers, speech therapists and occupational therapists. Parents of autistic children should be involved in the education of their children. Therefore, basic training of the parents on these therapies is necessary to ensure there is continuity of what happens at school.

Intervention programmes should be based on the unique combination of strength and needs of the children. Since autistic children are more visually oriented, visual materials should be
incorporated when teaching them. Information presented to them in a clear format focuses their attention and emphasizes the most relevant information that they need to learn.

Teachers need to consider the problematic behavior which autistic children tend to manifest and its functions to the particular children. Teachers should focus on making environmental adaptations to decrease inappropriate behavior in such children to help them learn other more appropriate behavior that will play the same function.

There is need for parents and caregivers to be aware of social and academic implications of defective communication in children. They also need to be sensitized on the benefits of various therapies to children with communicative disabilities. Some students with autism need to go on with further education; therefore, there is need for a greater emphasis on academic preparation. In addition, there should be development of job related skills and skills for leisure and recreation for these children while in school and after their programme is finished.

There is also need to ensure that family concerns and information on the condition of these children are gathered and parents are involved in the planning of those interventions. The skills and competencies the children have should be maintained and used to support new learning. Teachers must form relationship with the children in order to support them in meaningful ways.

Finally, the recommendation for the Ministry of Education is that it should re-examine the overall education system to ensure that these children can go on with school up to the highest levels. The Ministry of Education should therefore train and employ speech therapists in schools with such units. The Ministry through the Kenya Institute of Education should
develop a special curriculum for special children, autistic children being among them and ensure that it is implemented in schools.

5.5 Suggestions for Further Research.

The study focused on educational and linguistic therapies given to autistic children. It also looked at the effect of these therapies on communication ability of autistic children.

A study can be carried out to analyze the syntax, and phonology of the language of verbal autistic children.

Linguistic therapies of other language disorders like aphasia, diglosia and dyslexia can be researched upon.
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APPENDIX 1: Sign language used at the unit

1. THANK YOU

The sign for "thank you" is made by starting with the fingers of your dominant hand near your lips. Your hand should be a "flat hand." Move your hand forward and a bit down in the direction of the person you are thanking.

2. FINISH / OVER / DONE

The sign for "finish" is made by placing both of your open hands in front of you. Each hand should face you, with your fingers pointing upward. Twist both hands quickly a couple times ending with the palms pointing (somewhat) forward. You can also do this sign with just a single twist which makes it seem more "final."
3. **COME:**

Make the sign for "come" by pointing both index fingers toward each other.
Rotate both fingers around one another.
Move both hands toward your body.

4. **GO**

Make the sign for "go" by pointing both index fingers toward each other.
Rotate both fingers around one another.
Move both hands away from your body.
5. PLEASE

The sign for "please" is made by placing your flat right hand over the center of your chest. Move your hand in a clockwise motion (from the observer's point of view, use a circular motion towards your left, down, right, and back up) a few times.
APPENDIX 2a: A sample story

Polly Helps a Friend
Polly pedaled her bicycle swiftly as Mother trotted alongside her. Mother had to hurry to keep up with Polly. They were on their way to the park for their weekly outing. Polly's big blue bag with pink pockets was slung over Mother's shoulder. It held many of Polly's favorite things that she used to create wonderful pictures that Mother would fasten to the refrigerator door for everyone to see. Wonderful things were a part of these trips, wonderful sunshine, wonderful breezes, wonderful colors and most importantly, the big wonderful silver slide.

Polly was as happy as she could be today. The pink ribbon from her yellow pig-tails flew in the breeze behind her. Today, Polly felt more special than ever. Mother let her wear her new shorts outfit with the blue and pink flowers. Polly promised to be careful not to soil it. Polly loved Mother and always tried to make her proud. She wanted to be just like her when she grew up. Being outside today was like being in a beautiful dream of many colors. The windy sunshine was the yellowiest of yellows. It flooded Polly's smiling blue eyes and pink face as she looked at everything there was to see.

A tall, green Elm bowed its head to Polly and her mother as they passed. Several feet away, two young boys and a red, curly haired girl tossed a big green and white striped beach ball back and forth. The ball had just gone over the head of one of the boys. He scampered to get it before the red haired girl. Their happy yelps rode on the wind to Polly's ears. They only made Polly feel happier. Polly found the slightly off-key tunes of the ice-cream truck a special treat today. The truck was parked at the far side of the park's edge. Two teenagers dressed in white with tennis rackets raced to get ice cream and cold drinks.

Everything was wonderful today, even the birds sounded cheerier than ever. They whistled from nearby trees. Polly's bicycle barely stopped as she jumped off. They had arrived at the special place in the park where the giant silver slide lived. Polly loved the slide; she got a shivery joy each time she slipped along its long slender back. She ran over to the slide.

"Slow down, Polly," shouted her mother, smiling at her young daughter.

Barbara enjoyed these outings as much as Polly. She loved to just relax and visit with the other women she would meet there. They would trade stories about their children. When she felt like it, Barbara tucked her knitting or an interesting novel into Polly's bag. She felt a little tired from her brisk jaunt and plopped down at the nearest picnic table. Soon Carol, one of her friends, wandered over to her. Polly watched her mother and the other woman. Polly liked it when her mother chatted or visited with other women. It gave her extra long playtime.

The slide was cold today, but this did not stop Polly from whisking down its bare back. The cold metal sent shivers of fun through her. Faster and faster she slid each time she climbed the endless steps. Up, up, up she went eager to swoosh along the cold, silver slide. Polly loved to daydream while she rode on the slide. She would close her eyes and think of herself as a lovely princess on a white horse. Some days, she would pretend that she was either a lost puppy or a lost kitten looking for its mother. She would crawl around while she meowed or whimpered sadly. Polly had heard her mother say that she had a good imagination. She wasn't really sure what this meant. She guessed that it meant that she was really great at pretending things.

Polly continued her trips up the stairs and down the slide. On what was maybe her twelfth trip, a strange sound shot into the air. It was a very painful groan. "What's that?" she asked, jumping off the end of the slide.

"Oh, thank you!" came the answer over her shoulder.

"Who said that?" Polly asked again, looking round and round.

"I did."
Polly bent at the waist, jumped to one foot and spun around. She was staring right at the slide. Two very, very sad eyes stared back at her. "Thank you for getting off," said a giant mouth just below the teary eyes.

"My back aches really badly today."

Polly rubbed her eyes. Was this really happening? Could she believe her ears? Quickly, she looked over to where her mother sat with her friend. The two women were laughing and talking. Everything seemed okay. Polly looked back at the slide. "Excuse me", she said, "did you speak to me?"

"Why yes I did," answered the silver slide. "I'm sorry if I startled you, but I can't take it anymore. Each and every day children jump on me and race down my back. It was fine when I was young, but I've grown so old and weary. I'm not nearly as strong and in the great shape I used to be. I love the children, especially you Polly, but I shudder when they dig their feet into my back. What can I do? Can you help me, Polly?" With that, the poor old slide began to cry loudly. His steps shook with each large, wet tear. He pulled a large white handkerchief from his back step and blew his nose sadly. "If this keeps up, I will have to be turned into a pile of steel and thrown onto the junk heap. I know all I need is a little rest. In time I will be okay. The park is putting in a new slide soon. Guess until then, I will have to be brave."

Polly stepped back as she was puzzled. It took her long minutes to understand. This poor old slide that had given so many children so much fun over the years was asking her for help. She felt sad and important all at once.

"I'm sooooo sorry you are feeling bad" she heard her small voice say. Her tiny hand gently patted the aching steel. "There must be something I can do." Polly thought and thought for some time. She walked to a swing and started to sit down, but stopped. She then started to go to her mother for help, but again stopped. "Would mother believe her?" Polly wondered aloud. "A talking slide?" Polly did not know what to do to help her friend.

As she returned to the slide, Polly saw two workmen fixing one of the park benches. The workman dressed in gray coveralls nailed a brand new wooden arm to the bench. The second workman, who wore a white cap, took brushes and two cans from the back of his truck. Polly watched. He dipped his brush in one can of paint and stroked the wooden arm. Polly saw the green paint go on the arm and cover the wood. It looked new and shiny. People would have to wait a couple of days to sit on that bench she thought.

Suddenly her face lit up. She raced to her bicycle. "I've got it," she yelled. She grabbed for her big blue bag that was slung over the handlebars of her bicycle. Quickly, she sifted through it. She loved this bag; it had all of her favorite things. Polly pulled out a big, fat red crayon. She then snatched up a yellow sheet of drawing paper. Before a bird could eat a worm, she knelt and scribbled something on the paper. With that, she grabbed once more into the bag and was off in a race to her weary, waiting friend. "I have just the thing," she called to him, as she got nearer. The slide looked so unhappy. His big tears had made quite a large pool at his feet. Polly leaned over him. Her little hands worked quickly. She tucked and taped and finished. "There", she said, as she stepped back to see her work. Not too bad! This will work! Polly felt all warm and soft and good inside like she did when Mother hugged her. Just then she heard her mother's call that it was time to go home. "Don't worry, now you can get the rest you need to feel better." Polly called over her shoulder to the slide as she ran happily off to her mother.

Polly's arms waved to her mother. Barbara had been picking up the blue bag with its spilled crayons while she waited for her young happy daughter. She wondered why all the crayons were on the ground in such a hurried mess. "What went on here?" she asked her daughter.

"A good thing." answered Polly, hugging her mother. Polly felt proud and happy. Mother
would have been proud of her too. Polly wanted to walk her bicycle home so she could think about her special day and how she had made the slide happy. She really had done a good thing.

Mother and daughter left the park, arms around each other. They passed a bench where a mother sat holding her young son. The little boy seemed very sad. He asked his mother, "But Mummy, why can't I go on the slide?"

Polly heard his mother's answer; "You must stay off the slide for a few days, honey, the sign says "WET PAINT."" Polly smiled her biggest smile and hugged Mother tighter.

Adapted from www.childrenstories.com
APPENDIX 2b: An action song
God told Noah to build an arc
To build an arc, to build an arc
God told Noah to build an arc
And Noah built an arc

Gong gong gong and zig zig zig
Gong gong gong and zig zig zig
And Noah built an arc.

The animals went in two by two
The animals went in two by two
The animals went in two by two
And Noah built an arc

Gong gong gong and zig zig zig
Gong gong gong and zig zig zig
And Noah built an arc.

The rain came down shooo
The rains came down shooo
The rains came down shoo
And Noah built an arc

Gong gong gong and zig zig zig
Gong gong gong and zig zig zig
And Noah built an arc
### Word Finder

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### Annotation

![Image of word finder grid with a circle and fractions labeled](image)

**Very good.**
APPENDIX 3: Observation schedule

1. Elements of the physical environment in the classroom:
   a) Sitting arrangement.
   b) Shape and colour of items in the classroom.
   c) Instructional items and their utility.

2. Elements of the physical environment outside the classroom:
   a) Playing field and playing items.
   b) Dining room.
   c) Physiotherapy room.
   d) Other areas.

3. Communicative behavior of autistic children in and outside the classroom.

4. How therapy is given to the autistic children by the teachers in class

5. How therapy sessions are carried out outside the classroom
APPENDIX 4: Interview guide for teachers of autistic children.

This study is being carried out to determine the kind of educational and linguistic therapies given to autistic children and whether they improve their communication. This study will be useful to many teachers and parents of autistic children. Your co-operation during this exercise will be greatly appreciated and your responses will be kept confidential.

1. What is your level of education?
2. For how long have you taught these autistic children?
3. How many autistic children are in your class?
4. How many autistic children;
   a) Have some form of speech
   b) Are mute.
5. Name the linguistic therapies you give them?
6. Name the educational therapies you give them?
7. How do you apply these therapies
8. Do you think they are effective? Explain your answer.
9. What problems does each group display when learning?
10. What would you like to see improved or added to the system?
APPENDIX 5: Signing manual for one autistic child.

WAIT: banging the desk
FINISH: pointing at the ceiling
GOOD: clapping hands
SORRY: hugging the teacher or anyone close by
COME: putting hands together and putting them against the chest.
READ: opening any book
WRITE: point pencil to the teacher
I DON'T WANT: tying knots on a string
HOT: use anything as a fan
APPENDIX 6: Transcriptions from Tape Recorded Utterances by Teachers and Autistic Children

Teacher 1: Unafanya nini Ashley? (What are you doing Ashley?)
Ashley: ooh ummmmm
Teacher 1: Nimekuuliza unafanya nini! (I asked what you are doing!)
Ashley: mmmm (she mutters some sounds as she bangs the table)
Teacher 1: I will send you outside.
Ashley: No! No! No!

Teacher 2: James!
James: Teacher Mary!
Teacher 2: What is your name?
James: What is your name?
Teacher 2: Say your name is James.
James: Say your name is James.
Teacher 2: Your name is James.
James: Your name is James.
Teacher 2: My name is James.
James: My name is James.
Teacher 3: Do you want to play, Keith?
Keith: Yes, I will play a little.
Teacher 3: Why?
Keith: Because I am not well today.
Teacher 3: What is wrong with you?
Keith: I just want to play and go home.
**Appendix 7a: visual pictures used by teachers**

<table>
<thead>
<tr>
<th>Description</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>A picture of a car.</td>
<td><img src="image" alt="Car" /></td>
</tr>
<tr>
<td>A picture of the living room.</td>
<td><img src="image" alt="Living Room" /></td>
</tr>
<tr>
<td>A picture of a teacher teaching using a chalk board.</td>
<td><img src="image" alt="Chalk Board" /></td>
</tr>
<tr>
<td>A picture of a child reading a book.</td>
<td><img src="image" alt="Reading" /></td>
</tr>
<tr>
<td>A picture of a school bag.</td>
<td></td>
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<td>--------------------------</td>
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<tr>
<td>A picture of animals: dog, birds, fish and tortoise.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 7b: A photograph of a daily schedule used in Autism unit
Appendix 7c: Photographs of therapy sessions

i) Children arranging puzzles

ii) A therapist helping a child to blow bubbles

iii) A child jumping on the trampoline.

iv) Children modeling letters
v) Blowing bubbles

vi) Children writing

vii) Joining pictures using picture books

viii) A child joining the alphabet