

COMMUNICATION ENHANCEMENT STRATEGIES FOR THE
DEVELOPMENT OF COMMUNICATION ABILITIES AMONG AUTISTIC
CHILDREN IN NAIROBI COUNTY

by

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DEVELOPMENT OF COMMUNICATION ABILITIES AMONG AUTISTIC
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I declare that this thesis is my original work and has not been submitted to any other college or university for academic credit

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LIST OF ABBREVIATIONS AND ACRONYMNS

AAC	Augmentative and alternative communication
ASD	Autism spectrum disorder
DIR	Developmental individual difference and relationship
PECS	Picture exchange communication system
SDG	Speech generating device
VSD	Visual scene display

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ABSTRACT

This study examined communication enhancement strategies for the development of communication abilities among autistic children in Nairobi County. The study aimed at assessing the influence of visual objects strategies on communication development in autistic children, secondly to analyse the influence of augmentative and alternative communication strategies on communication development in autistic children and thirdly to assess the influence of social interaction strategies on communication development in autistic children in Nairobi county. This study adopted an exploratory research design with 24 participants and seven observation sessions. The study found out that visual objects strategies provided essential channel and means of communication for autistic children. It also found out that augmentative and alternative communication was instrumental in bettering the way children with ASD relayed their thoughts, needs and ideas to the world around them. The study found out that social interaction strategies enhanced communication among the children with autism and also enabled the children to interact with others in their surroundings. The study concluded that there was a positive effect of use of visual objects on development of communication abilities for children with autism spectrum disorder. The study also concluded that augmentative and alternative communication strategies were essential in boosting communication for children with autism. The study also concluded that social interaction strategy was used to better communication abilities for children with autism spectrum disorders. The study recommends proper and early diagnosis of ASD children, individualization of communication enhancement strategies and more investigation on communication interaction strategies that focus on social cues and that the society needs to appreciate the existence of autism spectrum disorders.

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

Introduction

Communication is instrumental in all spheres of life. According to Taryadi and Kurwanian (2018) communication enables people to associate and form relationships that create value, be it in the corporate or social worlds. At the same time, communication helps individuals respond to environmental cues thus leading to the interchange of information from one end to another. Without efficient mechanisms to communicate between the sender and recipient of information, there would be chaos as a result. Amuche et al. (2019) argue that in absence of communication, social interactions would not be feasible.

In organizations, communication is depended on for the basic functionality. It plays a role of a source of information, persuasion, giving instructions and education and enables the organizations units to work together in achieving the goals and objectives (Zorlu & Korkmaz, 2021). This means that communication is an integral aspect of human life. Without effective transmission of messages, social interaction and communication among members of a given society or organization would be highly jeopardized. Moreover, communication is only meaningful where messages are relayed in the appropriate media and information is synthesized by the recipients. The intended message must be deciphered for apt communication to happen (Laubscher et al., 2019).

Human communication is a composite of various social cues that establish information which can be understood by parties in the communication. Hence, humans tend to adopt environmental cues that are within their reach including language and signs. According to Feine et al. (2019) social cues in the field of

communication studies are categorized into four categories which include verbal, visual, auditory and invisible social cues. Moreover, these social cues are not used in isolation but are used in combination which builds interpersonal skills that are key components of enhancing communication among parties. However, human communication is not as simplistic as the generic social cues tend to portray. Elza (2019) noted that it is challenging to study human communication especially where non-verbal communication taxonomies are used.

Even through the ability to communicate verbally improves communication among people, its absence does not negate the need to create interpersonal communications. Individuals find ways of conveying information by use of non-verbal cues such as signs and symbols. O'Rourke et al. (2022) argues that human connectedness in communication is not confined to verbal communications. Communication enhancement strategies exist to cover the shortcomings present among people who are unable to use verbal communication. In the society, one group of individuals that have adopted use of non-verbal cues are those faced with autism spectrum disorders.

While communication may be easy for some people, children with ASD are not able to use traditional verbal communication thus creating a disparity. There is a huge disparity between ASD people and others fundamentally characterized by social, emotional, communication and cognitive challenges (Eckdahl, 2018). To alleviate this plight, special strategies such as visual cues and social interactions are used to improve the learning and communication abilities of ASD children (Gilson & Carter, 2016).

Autism spectrum disorder is a wide scoped neurodevelopmental issue that is an umbrella of conditions that describe complex neurodevelopment disorders that is

physically manifested by communication and behavior challenges. Autistic individuals are categorized into five groups depending on the levels of challenges faced in communicating, behaviors and socializing. These groups are Asperger's syndrome, childhood disintegrative disorders, Rett syndrome, Kanner's syndrome and pervasive developmental disorder (Mehdi et al., 2021). Asperger's syndrome is equally known as level 1 autism spectrum disorder which is manifested by difficulties in thought and behaviors, relate with peers and monotony of speech. Rett syndrome is an autism spectrum disorder that is manifested through loss of standard movement and inability to coordinate, slowness of speech and movement. Child disintegrative disorder is an autism spectrum disorder that is more often delayed as it comes later where a child experiences language, motor skills and social challenges. Kanner's syndrome is not an alarming issue as an individual will behave normally but shows lack of emotional attachment, does not interact with others and may show poor speech. Lastly, pervasive developmental disorder-not otherwise specified is most common and has a wide array of symptoms such as delays in language development and walking abilities and it may even go unnoticed (Bowden et al., 2021).

Children with autism spectrum disorders are considered to have neuropsychiatric disorders which in turn cause them to manifest a wide spectrum of behaviors, more often evidenced by a deficiency in verbal and non-verbal communication and social interactions (Zhao et al., 2018). Autism affects the normal brain functioning which results in a child's inability to express themselves using conventional communication means to respond to social interactions. Children with ASD require special communication strategies which aim at boosting social skills, improving communication, and also reduce their repetitive behaviors (Alli et al., 2015). Essentially, therefore, communication in use for this group of children focuses

on bettering their ability to communicate using various means. DiStefano et al. (2016) noted that whilst communication is an important aspect of social lives for all living things, autistic children are disadvantaged as they are unable to attend conventional schools.

Autism spectrum disorders (ASD) have various symptoms which revolve around communication in line with the age of the child. For instance, at birth, autism can be noticed when a baby is not capable of maintaining eye contact and a 2-year old child not being able to notice when others are hurt (Shen & Piven, 2017). However, these symptoms do not offer an outright conclusion that the child is autistic. Additionally, autism can impair intellectual abilities, language capacities, and memory abilities. Thus, ASD causes delayed development for the child significantly lowering the child's cognitive abilities (Al-Qaryouti et al., 2017). At the same time, autistic children manifest poor social and communication skills, have no intent to relay messages, and are incapable of effective usage of non-verbal cues in communication such as facial expressions.

According to Lorenzo et al. (2019) broadly speaking, communication enhancement strategies entail the use of non-conventional tools to communicate. According to Shire et al. (2015) communication entails the transmission of messages from one party to another. Communication is therefore a two-way process that effectively happens where the sender and receiver of the message can understand each other. In this aspect, communication enhancement for autistic children seeks to improve their ability to decipher messages, both verbal and non-verbal cues using enhancing tools.

In the last decade, strategies for boosting communication for autism spectrum disorder have been developed to enhance communication and social skills for autistic

children (DiStefano et al., 2016; Gilson & Carter, 2016; Shire et al., 2015). Essentially, these strategies focus on creating and or improving the abilities of autistic children to communicate and relate with others with consideration that they have limited communication skills. Moreover, ASD inhibits social interactions for children making it difficult for such children to respond to stimuli from their environment. According to Lacono et al. (2016) various interventions such as augmentative and alternative communication strategies are essential in creating confidence and communication abilities among autistic children that have dismal verbal capacities. This is because, these skills cover the deficit in communication and social skills which are necessary for apt daily communication (Victoria et al., 2015).

The essence of engaging in communication enhancement is to increase the chance of ASD children to participate in social activities and enhance motor skills and general fitness. The efficacy of a communication enhancement strategy exists if it brings out positive change in the way a child responds to such programs. In South Africa for instance, individualized attention aids in boosting communication among autistic children (Hampton et al., 2019).

This is the introductory section of this study. It elucidated key concepts and variables that form the basis of undertaking this inquiry. The themes examined in this first chapter were meant to showcase the need for undertaking the study. This chapter also presented the background to the study from a global, regional, and finally to a local perspective. Secondly, the problem to be addressed was discussed and thirdly the purpose and objectives outlined. Next, the justification and significance of this study were presented followed by the assumptions and scope for this study. Moreover, limitations and delimitations were explained in this section. Lastly, a summary that concluded in apt matters in this section is made.

Background to the Study

Around the globe, children with autism face difficulties in communicating and relating with other members of society. This in turn depletes their ability to engage, socialize and contribute to society development (Lorenzo et al., 2019). Therefore, the need to devise specific enablers to boost communication for children with autism spectrum disorder cannot be overemphasised. Children with autism spectrum disorder are trained using special visual tools and interaction strategies to enhance their emotional understanding and social interactions (Chengchen et al., 2021). Visual teaching for children with autism does not only entail mechanical memorization of cues but also focuses on mastering emotions. A combination of visual tools, interaction strategies, and assistive technology tools are used in improving communication among children with autism (Yap et al., 2019). Moreover, communication enhancement strategies are key to the development of cognitive abilities without which chances of enjoying normal social networks are inhibited.

Autism spectrum disorder characteristically entails mental health problems that limit the ability of autistic children to relate, learn in school, acquire knowledge, and access job opportunities more than their counterparts. For instance, communication enhancement strategies have been considered key integral measures for boosting communication and social skills among autistic children. This is because, by using picture exchange communication systems, autistic children were able to understand and give feedback in various scenarios (Taryadi & Kurwanian, 2018). Whilst several strategies are used to develop and improve communication abilities for children with autism, the current study focused on three constructs namely; visual objects, augmentative and alternative communication strategies, and social interaction strategies.

Visually based strategies entail the use of physical objects, pictorial representations, and drawings to assist children with autism to decipher the meaning of messages embedded in communication (Victoria et al., 2015). Augmentative and alternative communication strategy refers to any communication means other than speech such as gestures, pictures, sign language and speech generation devices, which enables an individual to pass a message (Obiakor & Bakken, 2018). Social interaction strategy entails enhancing positive behaviors through the use of organized activities in order to enhance communication (Gilson & Carter, 2016; Skoufeu, 2019).

Awareness about autism spectrum disorder and its communication enhancement strategies in Africa is scarce. However, the few contextual studies have yielded differing results. Speech therapy, creative skills, and social interaction are used to primarily improve communication abilities among children with autism (Nicola & Roelf, 2018). Most children with autism spectrum disorder seldom receive individualized communication teaching which worsens their plight. The use of ineffective and inefficient cues in handling children with autism hampers their understanding (Hampton et al., 2019). African caregivers are not well versed in child-dedicated communication skills with children with autism spectrum disorders. A mismatch of cognitive, language, fine motor skills, social awareness routines, and children's expressive non-verbal strategies rarely achieve their goals (Kevin et al., 2019). Without special attention to communication enhancement, autistic children are likely to deteriorate in movement, postural and joint stabilities, and coordination. Therefore, enhancing social communication for autistic children has focal importance as it builds their emotional and behavioral aspects which overall influence their social integration (Najafadabi et al., 2018).

In Kenya, the literature indicates that early intervention aids in communication development and further lists the challenges facing children with autism but do not identify the strategies to use (Macmbinji & Hadi, 2019; Njoroge & Nyakundi, 2017). Masai (2020) further acknowledges that the parents and caregivers of autistic children are seldom trained on robust and apt coping strategies for communicating with the children. The prevalence of children with ASD in Kenya stands at 1 child with autism in every 25 children and is spreading at a higher rate than the global average of 1 in every 160 children (Ndegwa, 2019). Therefore, knowledge on communication enhancement strategies is essential to help train autistic children on social and communication skills considering that they have critically impaired ability to socially relate and communicate, as well as restricted repetitive behaviors. The argument is that with communication interventions, autistic children can gain basic life skills that enable them to lead a good life. At the same time, communication enhancement strategies enable all stakeholders in the ASD fraternity to adapt to challenges and improve the well-being of ASD children (Njoroge & Nyakundi, 2017).

This study was based on autism centers in Nairobi City County. Nairobi is the capital city of Kenya. Generally, Kenya has few autism centers despite the government's declaration to ensure that everyone accesses education including the disabled (Otina & Thinguri, 2016). Those that are been established teach and care for children with autism by recognizing the inherent worth of each child with autism and accept the responsibility to protect these children from harm, promote their rights and ensure their healthy development, and emphasize freedom of inclusivity in a meaningful way (Holmeside School, 2022).

This study was anchored on symbolic interactionism theory. Symbolic interactionism theory posits that communication and people's behavior is as a result

of practical considerations among people (Dingwall, 2001). Moreover, this theory intimates people live in open systems in natural and symbolic environments. It emphasizes the use of symbols and the formation of meaning to foster communication among individuals. The theory further asserts that objects primarily are void of meaning but get meaning through symbolic interaction (Stephen et al., 2019). Individuals act and understand each other concerning how they deduce symbols in their environment. This makes it insightful in understanding special images and symbols used in teaching children with autism.

Autistic centers as corporate organizations

A corporate organization is an association comprising of individuals who have come together to achieve a common goal (Oluwayemi, 2018). These individuals interact with one another and operate under a defined structure in order to achieve the goal. The structure that binds the individuals working together gives guidance on features like the channels of communication, roles to be undertaken and the line of authority (Oluwayemi, 2018). An individual or group of people who have a stake in a corporate organization or who affects or are affected directly or indirectly by the corporate organization's decisions is a stakeholder. The customers and employees are among the primary stakeholders of a corporate organizations because without them the organization would be non-existent (Benn et al., 2016).

An autism center is an organization that runs a programme that strives to improve the lives of children with autism spectrum disorder through education, support and treatment. Similar to a corporate organization, an autism center is comprised of individuals who have come together for a common goal which is to help teach and care for the children with autism who are the primary stakeholders. It is important to consider the stakeholders' needs in order to achieve the goals set in an

organization. Effective communication plays a key role in the achievement of organizations goals (Rajhans, 2018). ASD children, as one of the main stakeholders in autism centers are not able to use traditional verbal communication. Rajhans (2018) notes that lack of proper communication makes it impossible to achieve goals. Therefore, special strategies such as visual objects and social interactions can improve the communication abilities of ASD children in autism centers as corporate organizations.

Problem statement

Communication enhancement strategies are ideally meant to improve social skills and communication abilities of children with autism spectrum disorders. Communication interventions among ASD children promote social skills and enable young children with autism to live fulfilled lives (Hampton et al., 2019; Kaiser et al., 2017). However, there are no conventional agreed-upon communication enhancement strategies that are construed to improve and develop communication skills. Specifically, in Kenya, there are no laid out communication enhancement strategies that can be used to improve communication for autistic children and this tasks the parents and guardians of autistic children with the responsibility to find the best strategy for use (Ndegwa 2019; Stephen et al., 2019; Amelia et al., 2018).

Around the world autism spectrum disorder prevalence is approximately to be about 1.7 percent of worlds' population and therefore this phenomenon cannot be overlooked (Amanda et al., 2018) In Kenya, one child in every 25 children is autistic and the prevalence is spreading at a higher rate than the global average of 1 in every 160 children (Ndegwa, 2019). Besides, these statistics, there is general social stereotyping by members of the society towards individuals with autism spectrum disorders. Additionally, children born with autism spectrum disorder may not achieve

their full potential in terms of cultural acceptance by non-autistic individuals due to the former's expressive language. Rose et al. (2016) noted that close to 50 percent of children with autism spectrum disorder exhibit expressive and receptive language deficits leading to their alienation by other individuals. Alternative means of communication are warranted when individuals have trouble communicating naturally (Ascari et al., 2018).

Njoroge and Nyakundi (2017) interrogated the challenges facing children with autism in Nairobi and Kiambu counties. Results evidenced that early intervention potentially improved communication abilities and the development of language. Macmbinji and Hadi (2019) focused on assessing integrated therapy for children with autism spectrum disorder in Mombasa and results manifested that late communication enhancement scantily developed communication abilities for ASD children. This study examined the effect of three different constructs of communication enhancement strategies namely: visual objects strategies, augmentative and alternative communication strategies, and social interaction strategies. This contrasts with other studies that have focused on one of the facets (Gilson & Carter, 2016; Lorenzo et al., 2019; Zhao et al., 2018).

There also exists a contextual gap as most studies are done outside Africa in countries that are already cognizant of the needs of ASD children unlike in emerging economies where Kenya belongs (DiStefano et al., 2016; Victoria et al., 2015). In addition, studies done in Kenya indicate that early intervention aids in communication development and further identified challenges facing children with autism without showing which strategies to use (Macmbinji & Hadi, 2019; Njoroge & Nyakundi, 2017). As such, the purpose of this study was to interrogate the effects of

communication enhancement strategies on the development of communication abilities among autistic children in Nairobi City County.

Purpose of the Study

The purpose of this study was to interrogate the effects of communication enhancement strategies for the development of communication abilities among autistic children in Nairobi County.

Research Objectives

This study aimed at meeting the following three research objectives:

- (i) To assess the influence of visual objects strategy on communication development in autistic children in Nairobi County.
- (ii) To analyze the influence of augmentative and alternative communication strategies on communication development in autistic children in Nairobi County.
- (iii) To assess the influence of social interaction strategy on communication development in autistic children in Nairobi County.

Research Questions

This study attempted to provide answers to the following research questions:

- (i) What is the influence of visual objects strategy on communication development in autistic children in Nairobi County?
- (ii) What is the influence of augmentative and alternative communication strategy on communication development in autistic children in Nairobi County?
- (iii) How does social interaction strategy influence communication development in autistic children in Nairobi County?

Rationale of the Study

This study saw the need for extensive and rigorous research on communication abilities among children with autism spectrum disorder in Sub-Saharan Africa. This was seen as particularly important as children with autism spectrum disorder are often neglected which leads them to lifelong suffering (Amuche et al., 2019). Even though a few studies have been done in Kenya, more studies needed to be done because most of the studies done previously did not examine communication strategies that are in use in improving communication among children with autism spectrum disorder. In absence of interventions, children with autism spectrum disorder may find it difficult to communicate and relate with society members. Thus, this study was instrumental because it offered insights on communication enhancement strategies. Also, the study contributed to the theoretical and empirical discourses on information about communication and communication enhancement strategies. The study delved into communication enhancement strategies in use which included visual objects, augmentative and alternative communication, and social interaction strategies.

Significance of the Study

Undertaking this study was vital as the discussions and findings were seen as useful to several stakeholders. The first beneficiaries of this study being the parents with ASD children and autism centers. This is because the parents and autism centers would obtain robust and useful information that could be used to promote communication development for autistic children. In addition, they would be in a position to understand the various strategies they can use to improve the social and communication skills of autistic children. Autistic centers can be classified as corporates and therefore this study will benefit institutions and add to the literature in

corporate communication. Secondly, this study elucidated communication enhancement strategies for the development of communication abilities among autistic children in Nairobi County. Therefore, the results would be useful to the ministry of education and the state department of Special education. The findings will promote the efficacy of strategies adopted to improve the welfare of children with autism. Thirdly, this study will have immense benefits for other researchers and scholars who have an interest in studying communication enhancement strategies for the development of communication abilities among autistic children, not only in Kenya but in other countries. In essence, it will be a source of empirical evidence on the effect of visual objects, augmentative and alternative communication, and social interaction strategy on various aspects of communication development for ASD children.

Additionally, there is stigma towards children with autism spectrum disorders from members of the society. Non-autistic individuals in African set ups are yet to accept the fact that autism spectrum disorder is a medical condition that parents have no control over. Moreover, the general public needs to be educated on autism spectrum disorders so that they may be enlightened that autism is not a bad omen. The public should embrace children born with autism spectrum disorder and adopt other cues to communicate with them.

Assumptions of the Study

At the onset, this study was developed under several assumptions. To begin with, although communication enhancement strategies are at the center of learning in the selected sector, it was assumed that the participants would be emotionally stable during the interview sessions and would be open to share their experiences and insights on the communication enhancement strategies which will provide valuable

information for this study. In this study, the aim was to investigate communication enhancement strategies for children with autism spectrum disorder. In addition to using interviews, observation was also used to collect information that may be missed out. It was therefore assumed that the researcher presence would not affect the autistic children's behaviour because of the unfamiliar presence. Observation in this study was discreet where the children participating in the study were not be made aware that they are being observed. The researcher attended learning sessions and observed what took place in the autism centres when utilising the three communication enhancement strategies namely visual objects, augmentative and alternative communication strategies and social interaction strategies.

Scope of the Study

This study interrogated the effect of communication enhancement strategies on the development of communication abilities among autistic children in Nairobi County. Concerning geographical scope, this study was localised among autistic centers as corporate organizations in Nairobi City County. The target population for this study was 6 autism centers located in Nairobi County. Nairobi County was seen as appropriate because of accessibility for the researcher and it is cost effective.

Limitations and Delimitations of the Study

This study had two limitations. The first one is that there are no studies in Africa and specifically Kenya that identify agreed upon communication enhancement strategies that can be used to improve the communication abilities of autistic children. Secondly, some of the participants may have experienced minimal or no effect of using communication enhancement strategies. This study aimed to generate significant contribution of literature despite the fact that there being no existing information on communication enhancement strategies for the development of

communication abilities among autistic children. In addition to that, this study also aimed to generate ideas for researchers who would like to research on communication enhancement strategies. As for the participants who have experienced minimal or no effect of communication enhancement strategies, the researcher requested them to provide information on any other strategies that they have used to improve communication of autistic children or give a referral to other participants who can provide the information.

Considering that delimitations represent factors or conditions that the researcher has control over, the researcher used primary data to gather and collate information on communication enhancement strategies for the development of communication abilities among autistic children in Nairobi County. Only three explanatory variables were examined: visual objects, augmentative and alternative communication strategies, and social interaction strategies.

Definition of Terms

Visual objects strategy: Visually based strategies entail the use of physical objects, pictorial representations, and drawings to assist children with autism to decipher the meaning of messages embedded in communication (Victoria et al., 2015). In this study, it meant the use of physical objects, drawings, pictures, labels and symbols.

Augmentative and alternative communication strategy: entails the use of sign language and speech generating devices to represent things or messages. It is a strategy that seeks to improve or replace spoken language among children with autism (Syriopoulou & Eleni, 2021). In this study, this entailed the use of sign language such as gestures and facial expressions and speech generating devices like picture exchange communication system and tablets/phones.

Social interaction strategy: Social interaction strategies entail structuring the child's environment in a way that creates opportunities for social interactive activities (Skoufou, 2019). In this study, this meant sharing time, group games and engaging in creative plays and games.

Autism spectrum disorder: mental health problems that limit the ability of autistic children to relate, learn in school, acquire knowledge, and access job opportunities more than their counterparts (Victoria et al., 2015).

Communication enhancement strategies: non-conventional tools that are useful in improvement of communication between individuals. Without the strategies, children with autism are unable to relay or get information from the other members of a given society (Amelia et al., 2018). In this study, this represented use of visual objects, augmentative and alternative communication and social interaction strategies.

Communication abilities: this involves the competence in receiving, interpretation and conveying messages. (Wardono et al., 2020). In this study this represented the ability to understand communication and social cues and respond accordingly.

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Summary

Chapter one essentially provided a background to the study, then critically presented the statement of the problem and outlined the objectives. Moreover, this section explained the justification and assumptions of the study. In addition, the section had assumptions about the study and the scope of the study. The chapter also made key arguments that situate autism centers as corporate organizations, in terms of constitution, operation and stakeholder associated with these centers. The next chapter, titled literature review focused on various themes including theoretical underpinning, general literature, conceptual framework, and empirical literature review. The third chapter delved into research methodology and captured subtle information relating to research design and data management and results synthesis.

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CHAPTER TWO

LITERATURE REVIEW

Introduction

Literature review delves into the scrutiny of existing knowledge on concepts that are pertinent in a given study. Moreover, a literature review characterizes a problem concerning what has been researched and what is yet to be covered. This section entailed a presentation of literature in different metrics in line with variables. It was structured into three main spectrums: theoretical framework, conceptual framework, and empirical literature review.

Theoretical Framework

The theoretical framework entails a review of theories that offer expansive knowledge concerning the interconnectedness of concepts. A theory is a proposition that characterizes a phenomenon by substantiating why things exist as they do (Hegde & Salvatore, 2019). Moreover, the theory provides the basis for understanding phenomena and predicting and elucidating situations. This study delved into the effect of communication enhancement strategies on the development of communication abilities among children with autism in Nairobi. The symbolic interactionism theory provided an explicit articulation in regard to the concepts of the study.

Symbolic interactionism theory

Symbolic interactionism is a theory under the field of social sciences developed by George Herbert Mead and Herbert Blumer in 1934 and 1937 respectively. The theory describes people's interactions and how it contributes to the creation and maintenance of a society with particular focus on symbols as the means to interact (Mardon et al., 2021).

In essence, it implies that human behavior is a result of the interpretative abilities following the acquisition of the information contained in symbols that are found around individuals. These symbols are a source of cues to individuals because actions or inactions from individuals are dependent on how they interpret the symbols. In context, a symbol is anything around an individual that the individual interprets to behave in a certain way. Major symbols in a societal setup include words, language, events, gestures, objects, and images (Leveto, 2018).

Symbolic interactionism is summarized in three core tenets which include the actions of people towards other people or surrounding things is based on their subjective views or meanings, which are acquired during social interaction and thereafter undergo an interpretation process to gain understanding (Mardon et al., 2021). The existence of varying symbols in the environment creates a wide spectrum of interpretations, as individuals perceive them differently. This is because individuals interact differently with symbols even while in the same environment. Understanding the individual perception of symbols can thus be a good ground for influencing their behavior in the desired ways.

Effective communication, therefore, exists when two or more individuals identify symbols and associate meanings with them through social interaction. Through these repeated actions and interactions, communication metrics exist, and the outcome is the creation of societies where individuals can exchange information through various symbols. In essence, the theory of symbolic interactionism considers that human beings are social, have thinking capacities, are aware of their environment, and are constantly active beings concerning their response to environmental symbols (Hay et al., 2021).

Application of the theory to the study

Symbolic interactionism theory was appropriately used in this study as it aided in understanding how communication happens in different environmental backgrounds using symbols as a means of interaction. The theory posits that interactions between individuals and symbols are the prerequisite of communication. The most common symbol is speech as relayed in languages. However, for children with autism, the use of speech is limited, and therefore special techniques and tools are used to improve communication. This study narrowed down to visual objects strategies, augmentative and alternative strategies, and social interaction strategies which when acquired, can contribute to the ASD children's empowerment to utilize the symbols in their interactions thus the development of communication.

Communication is an important aspect in the development of interpersonal skills because it enhances the passing of messages from one person to another. This study particularly delved on communication for children with autism spectrum disorder and has identified three strategies; visual objects, augmentative and alternative and social interaction strategies. Symbolic interactionism theory offered a framework that show how individuals interact in their environment creating symbols that establishes communication (Carol et al., 2020).

Individuals decipher meaning from cues, objects and concepts to derive meaning in the places they live in. Hence, symbolization is at the centre of any form of communication, verbal or otherwise. Human beings achieve expressive abilities depending on human interactions that are functions of the environment in which they live in. The theory therefore is ideal as it offers ideas on principles that govern communications (Ardi et al., 2020). Moreover, symbolic interactionism theory predisposes communication as an issue of situational, personal and societal identity where ideals are spread. The central role of theory was to offer a framework that

guides studies on communication in society. The theory asserts that in a society, symbols are continuously being initiated where individuals associate the symbols with meanings, develop views and ultimately communicate with each other (Kurniati & Yusuf, 2019). Therefore, this theory fundamentally offered a good theoretical underpinning for communication enhancement strategies.

Whilst the theory has pros, it suffers from several cons. Firstly, it applies to a small social interaction setup as it lacks testability in large societies. Secondly, the theory narrowly focuses on symbols as the basis for the exchange of information in different types of populations and or cultures (Kalkhoff et al., 2020). The theory neither focuses on social institutions that are implicitly within a given society nor exchanges between individuals and institutions. Lastly, symbolic interactionism fails to consider the case of unresponsive individuals (Amelia et al., 2018). Despite the limitations of the theory, it was still a useful theory to guide the present study, and this explains why it was retained to provide theoretical knowledge and guidance.

General Literature Review

This part delved into the presentation of relevant literature in line with the variables that are examined in this study.

Communication abilities

Communication ability is an integral aspect of the day to day life of all individuals. Individuals capable of communicating are able to relay messages, receive messages and express their thoughts to those they interact with (Elza, 2019). Moreover, where an individual is able to express themselves, they are able to relate well with peers and other members of society. Therefore, the ability to communicate is a key component for the wellbeing of individuals. Where communication is bad or compromised by the inability of individuals to communicate, then establishment of interactions are limited limiting congruency in the society. Societal interactions are enabled by existence of communications (Ismiarti et al., 2018).

In the society we live in, there are diverse communication channels that individuals use to transmit messages. Most common is use of verbal language that is learnt through interaction of an individual with the environment they live in (Amanda et al., 2018). For instance, besides mother tongue, individuals learnt second and other languages by interacting with other people who speak other languages. Therefore, verbal communication is not solely dependent on the first language and is not confined to use of words but encompasses sounds. Another form of language is written language that is manifested through writing. However, children with autism spectrum disorder are unable to adopt verbal communication skills in good forms as it is the case for non-autistic children.

Critical components of communication abilities

Communication is not a one-way process but exists where parties are able to understand each other. Communication exists where information from one party is understood as relayed from the sender (Elza, 2019). Therefore, communication is characterized by the correctness of information conveyed from one person to another. Moreover, communication is an active process because it involves an action or a series of actions between two parties. According to Ascari et al. (2018) communication exist where one gives information, and the other person receives the information in the intended way. As such the end point of communication is receipt of messages in the intended form.

There are different types of communication depending on the environment and the target audience. Therefore, different communication styles are used as appropriate so that information is relayed in the most effective manner. The audience plays an important role in selection of communication style (Carol et al., 2020). For instance, use of signs and other augmentative strategies is suitable in communicating to individuals who are not able to use verbal communication. Moreover, the choice of communication style must be friendly in a way that the intent of the communication is achieved. Effective communication fosters trust and understanding which overall creates a positive attitude in communication. In absence of positive attitudes, communication process becomes flawed and unsustainable.

Communication challenges experienced by autistic children

Children with autism spectrum disorder face difficulties in their communication abilities. This is because, as it has been defined autism spectrum disorder is present where there is neurodevelopmental challenges that is usually manifested by inability to communicate normally and show expressive behavior (Himmah et al., 2021).

Currently the cause of autism spectrum disorder is unknown, but research done shows that it arises from having an abnormal brain structure or inheritance of the autism gene from family members (Liabes & Mayada, 2021). Other causes of autism spectrum disorder involve problematic pregnancies and exposure of the brain to dangerous infections like meningitis (Liabes & Mayada, 2021).

Autism spectrum disorder primarily makes an individual unable to express themselves, express feelings, desires and relate with those in their environment. Autistic children encounter challenges in verbal and nonverbal communication. White et al. (2021) noted that 25-30 percent of autistic children do not acquire speech in their lifetime while the rest acquire speech very much later in their life. They also experience a deficiency in social interaction whereby they lack the skills to engage with people in social settings and read nonverbal communication for example facial expression (Zulkefli & Rabi, 2018). They face difficulty in maintaining eye contact, reading facial expressions and even voice tone. Autistic children also engage in repetitive behaviours like stimming, hand flaps or repetition of words commonly known as echolalia. Echolalia involves the repetition of words from previous spoken words (Neely et al., 2016). For example, when an autistic child repeats a question asked severally instead of responding to it. These challenges can mild or severe depending on the diagnosis. Autism spectrum disorder can be diagnosed from age three and this ranges from mild autism to severe (Zulkefli & Rabi, 2018). Autism spectrum disorder has no cure but can be managed if diagnosis is done early after which interventions can be introduced to help minimize the challenges (Sheeba et al., 2023). It is for this reason that researchers are concerned with non-verbal communication strategies that enable individuals with autistic characteristics to achieve communication abilities to lead normal life.

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Communication enhancement strategies for children with autism spectrum disorder

Children with autism spectrum disorders face a challenge in social communication and social interaction. They are unable to communicate in speech or language and this predisposes them to the inability to interact with other members of society. Communication enhancement strategies seek to improve their response to environmental cues and boost communication. Without the strategies, children with autism are unable to relay or get information from the other members of a given society (Amelia et al., 2018).

According to Pawlett (2017), strategies for addressing ASD challenges are broadly categorized into three metrics: visual objects strategies, augmentative and alternative communication strategies, and social interaction strategies. Visual objects entail the use of physical objects, pictorial representations, and other manual signs that enhance the information exchange process. When a child with ASD is trained on these cues, they can relate the objects with certain specific information. It is only through the correct interpretation of visual cues that an individual can get the information being communicated. Visual training is an integral component of visual communication as it equips an individual with the ability to understand and respond. Individuals with autism have a capability of processing visual information more than aural information (Victoria et al., 2015). In addition to that, the use of visual objects, pictures, symbols, and signs tends to form a lasting memory in the learner's sensory system thus boosting their communication and social interaction abilities (Laubscher et al., 2019).

Autistic children face challenges of comprehending information presented verbally and therefore require interventions that are presented visually. Visual objects strategy increases opportunities for learning communication and comprehension of

information in situations that may be stressful (Kidder & McDonnell, 2017). Visual objects play a role in improving communication abilities for autistic children by showing them what is expected of them using visual objects (Putri et al., 2018). For example, when you want to feed an autistic child, use of visual objects strategy involves showing the child a picture of food or the food itself in order to help them understand the next activity. Putri et al. (2018) noted that visual objects strategy involves anything that shows information by using visuals. The process begins with the use of natural objects, to colouring photographs and images then moves to line drawings which is then followed by graphic symbols and finally written communication. Use of visual cues begins with the use of simple objects to abstract (Dwivedi & Bajpai, 2023). Visual objects are highly recommended for training autistic children because it has the potential of improving the communication abilities of autistic children and showing them how to control themselves. Teaching an autistic child to communicate involves the use of positive feedback when the child is learning, planning of tasks appropriately, using age friendly materials, allowing the child to choose the material to use and breaking down of the instructions to steps that are understandable (Dwivedi & Bajpai, 2023).

Kidder and McDonnell (2017) outline that visual objects strategy can be utilized to improve the communication abilities of autistic children through scheduling of activities to teach them the sequences and what they are expected to do in order to prepare them for the activities to come. In addition, the use of photographs, images or texts that are printed can be used to make contingency maps. Contingency maps show the targeted behaviour followed by the replacement behaviour which normally is an appropriate way to help autistic children avoid engaging in unconventional behaviours due to frustration of not knowing what to do next (Kidder

& McDonnell, 2017). Use of visual objects as cues to provide prompts or reminders is another way to help improve communication for autistic children. Cuing involves the display of pictures to show expected behaviours especially used when a parent or professional wants an autistic child to stop or continue a certain behaviour (Kidder & McDonnell, 2017). An example involves using a cue card to communicate to an autistic child to stop self-harming or engaging in a self-stimulating behaviour like hand flapping.

Argumentative and alternative communication (AAC) entails the use of sign language and speech generating devices to represent things or messages. It is a strategy that seeks to improve or replace spoken language among children with autism (Syriopoulou & Eleni, 2021). Moreover, ACC is employed where children have a deficit in communication characterized by minimal or no functional communication, and it aims in achieving effective communication in any way possible. The cues used in ACC are varied and do not solely focus on improving traditional speech but consider other forms of communication (Majoko, 2017).

There are two sub-categories of ACC; aided or unaided whereby the former entails the use of hand signs or gestures together with equipment to enhance and support speech while unaided ACC which does not use any objects or equipment in the development of speech apart from sign language (Lorang et al., 2020). AAC purposes to improve communication through the use of sign language and external devices. Sign language involves the use of body movements to pass information from one person to another as a result of communication challenges (Eltyeb, 2023). Body language include pointing, facial expressions and gestures. It has been considered as a good alternative to oral communication for children with autism spectrum disorder (Eltyeb, 2023).

Aided augmentative and alternative communication is further divided into three sub-categories namely; low technology, which are non-electronic in nature and include pictures, boards, drawings and communication binders (Lorang et al., 2020). In this case, an autistic child might use the low technology AAC to ask for an item by handing it to the parent or professional or pointing it. Picture exchange communication system is an example of low technology aided augmentative and alternative communication that involves training an autistic child to use a picture to request for an item. What is expected of the parent or professional during the use of the picture exchange communication system is the maintenance of eye contact, use of sound and strive to attain understanding with the autistic child. When autistic children are trained using picture exchange communication system, there is a likelihood of improvement in communication (Putri et al., 2018). Medium technology device involves a voice output communication aid that utilizes electrical means to give digitized speech whereby the user is required to press on the picture or symbol showing on the device which in turn produces words about the displayed symbol (Nunes, 2015). Examples of medium technology AAC are ablenet and cheap talk 4. High technology AAC include more advanced speech generating devices or tablets, ordinary computers and phones that can have software installed for example communique (Nunes, 2015).

Augmentative and alternative communication plays a role in supporting communication development (Radici et al., 2019). AAC is a complement to traditional communication for individuals who have challenges communicating with other people (Ascari et al., 2018). Augmentative communication strategies complement traditional communication for autistic children who have challenges while alternative communication strategies provide an option or replacement for

traditional communication. Through the use of augmentative and alternative communication strategies, autistic children can engage with other people and share information.

When using augmentative and alternative communication to improve the communication ability of autistic children, three components namely symbols, transmission devices and selection techniques are required (Nunes, 2015). A symbol is anything around an individual that the individual interprets to behave in a certain way. Major symbols in a societal setup include words, language, events, gestures, objects, and images (Leveto, 2018). Augmentative and alternative communication strategy utilizes symbols which can either be in visual and audio form or a physical form (Nunes, 2015). Transmission devices are needed when using medium and high technology aided AAC including the parent or professional to help in the selection process of the symbol that is to be introduced to an autistic child. There are also websites like arasaac that provide a wide range of graphic symbols that can be utilized to improve communication abilities for autistic children (Nunes, 2015). AAC is a multimodal strategy that involves the combination of two or more interventions to improve functional communication in autistic children. Brady et al. (2015) noted that multimodal strategies are seen to be more efficient than single strategies. AAC combines sign language and speech generating devices, which can be effective in communication development in autistic children.

Communication plays a key role in socialization. Challenges in verbal expression bring about problems that hinder the passing of meaningful messages, learning and social activities which in turn lead to social and emotional problems (Ascari et al., 2018). Autistic children manifest a deficiency in social skills. Social skills contribute to the creation of a bond or relationship between autistic children and

people around them through the use of verbal and non-verbal communication (Skoufou, 2019). They also have low receptive and expressive abilities, and this is amplified by limited social interaction difficulties (Huan et al., 2018). Moreover, children with ASD tend to exhibit unconventional repetitive behavior characterized by varied personal interests. In this aspect, engaging in common activities is a challenge. The social interaction strategy, therefore, focuses on the creation of an enabling environment for the child to socialize and express themselves.

Social interaction can be attained using planned activities aimed at familiarizing autistic children with people around them in order to foster trust (Skoufou, 2019). Social interaction strategies entail structuring the child's environment in a way that creates opportunities for social interactive activities. Skoufou (2019) outlined the spell approach as a technique that can be used to improve social interaction in autistic children. The spell approach involves structuring the environment around the child with appropriate tools and social setup aimed at ensuring that the child fits in the environment and also eliminates anxiety. It also involves the creation of positive attitude through encouragement to build confidence in the autistic child. Spell approach works towards structuring an autistic child's environment to reduce anxiety and encouraging the child to create confidence in themselves and the milestones that they achieve. This approach recognizes the needs and uniqueness of each autistic child and emphasizes on reducing their anxieties and building on their strengths which has the potential of enhancing learning (Dwivedi & Bajpai 2023).

One major social interaction strategy is the use of play which creates a chance for the child with ASD to learn by copying basic movements and communication from peers or trainers. Gonzalez-sala et al. (2021) affirms that play is important in

child development because it helps improve cognitive, motor and most importantly social skills. Skoufou (2019) outlines the use of creative play as a way of increasing a child's interest in others and encourage emotional intelligence. An ASD child should also be encouraged to engage in group activities/games and reinforcements used to build their confidence. Play is only effective where the child is not coerced or forced to engage. Actively involving of ASD children in social situations on a daily basis encourages the development of social interaction and a learning opportunity (Skoufou, 2019).

Use of Dir model has also been seen as another way to encourage play in autistic children by use of floor time and child centred plays. DIR model involves the use of creative play as a way to increase a child's interest in people and help develop their emotional intelligence (Skoufou, 2019). DIR model tries to encourage effective communication by increasing interpersonal connections when a parent or professional engages an autistic child. Use of the DIR model helps to stimulate a child's brain to think, solve problems and encourages the utilization of communication spontaneously. DIR model encompasses strategies that build on social communication and relationships which builds emotional intelligence and support cognitive and social development (Sheeba et al., 2023). This is because of the engagements, interactions, shared attention and play. Floor time for example, happens in a natural setting and involves a child sitting down on the floor with a parent or professional. The main aim of floor time is to take the child to the milestones that he/she might have skipped. During floor time, a child gets the chance to engage in create opportunities to learn communication at first using words which is followed by gaining the ability to think.

The use of play helps autistic children to avoid self-absorption and share with others (Dwivedi & Bajpai, 2023). The use of ordinary tools such as toys and also

games helps to create engagement between the autistic child and the professional or parent and this helps to improve communication and create familiarity. The use of play has been recognised as an intervention for children with autism and research in education practices highlights it as an effective way of training autistic children (Dwivedi & Bajpai, 2023). Some of the plays include hide and seek, blowing bubbles, block tower building and learning the use of facial expressions. In order to encourage the learning process, there should be elimination of stress, less physical contact and use of clear and low voice when handling an autistic child thereby creating a surrounding that does not over stimulate an autistic child (Dwivedi & Bajpai, 2023).

Whilst therapies for children with ASD are available, most tend to focus on the role of specialists, and require time to implement making it a challenge for some parents who may not afford the services (Lorenzo et al., 2019). Children with autism traits face difficulties maintaining eye contact, responding to facial expressions, and participating in children's social activities and all of these require specific tasks and approaches from trainers and parents. Thus, the choice of media adopted to boost their communication skills must be related to the specific age and abilities of the child in question. To achieve significant results, it requires intensive behavioral interventions in the correct combination. This is often expensive and if not consistently applied may not achieve the desired results. The choice of specific communication tools among children with autism should be made on their ability to be used consistently in establishing a language and enhancing the communication abilities of the children.

Regardless of the choice of media to be used, communication enhancement tools ought to be simple, encourage play during social interaction and create interest in a child. An effective choice should develop autistic children's language and communication skills (Chengchen et al., 2021). At the same time, it should not only

focus on spoken language but also on other forms of communication because children with autism often exhibit delayed speech and some may not be able to speak at all. Moreover, children with ASD are trained in different aspects, for instance using play, humorous interactions, and non-verbal cues to help them improve their communication abilities. According to Amelia et al. (2018), appropriate communication enhancement strategies are meant to be child-centered. Trainers, parents, or guardians should learn to communicate with children with ASD in the way such children understand as opposed to forcing them to understand the conventional ways.

Empirical Literature Review

Chapin et.al. (2020) explored symbolic communication in a study titled “Effects of video visual scene projection technology affected the symbolic communication turns taken by children with ASD during a shared activity”. A Samsung tablet computer was used in the collection of data via an observation approach. Descriptive statistics were used in the data processing. Results portrayed that video VSD technology did not have a large effect on the communication of young children with ASD.

Laubscher et al. (2019) interrogated communication tools among children with ASD in a study titled “Effect of an application with video visual scene and displays on communication; pilot study for a child with autism spectrum disorder and a peer”. The goal of this study was to see how a tablet-based AAC device with video visual scene presentations and training facilitated communication between a kid with ASD and a peer with usual development during three different play activities. Findings showed that using a video VSD intervention to help children with ASD and limited speech interact with their classmates during pretend play may be useful.

Victoria et al. (2015) undertook a study on “Evaluating visual activity schedules as evidence based practice for individuals with autism”. A literature review on articles was used to gather data. The findings of the study demonstrated that visual aids could be utilised to reduce unconventional behaviours of autistic children. The findings also showed that scheduling could be used as an effective way of teaching autistic children to transition from one activity to another and also show them the steps in completing a task.

Putri et al. (2018) took a study on the “the influence of picture exchange communication system method towards the communication ability of autistic child”. Descriptive statistics was used to synthesis data and derive inferences. It was observed that the use of PECS contributed to the improvement of communication ability among autistic children; specifically, the use of visual aids, word cards, and also images.

Lacono et al. (2018) carried out a study that was titled “The role of augmentative and alternative communication for children with autism: current status and future trends. In essence, the study sought to evaluate the augmentative and alternative communication strategies among children who had autism disorder. Data were collected from published reports that were presented in past journal articles. Descriptive statistics was used to synthesis data and derive inferences. It was observed that augmentative and alternative strategy had a positive impact on communication for children who had autism disorder.

Syriopoulou and Eleni (2021) reviewed augmentative tools and their role in communication among children with autism in a study titled “Effectiveness of different methods of augmentative and alternative communication in developing communication skills and boosting the vocabulary of children with autism spectrum

disorder; a review. Both electronic databases and publications were used to source data. The systematic review model was used to assess the data. It emerged that the use of augmentative and alternative communication technologies among children with autism spectrum disorder improved their communication skills.

Lorang et al. (2020) were motivated to examine “Speech-language pathologists’ practices in augmentative and alternative communication practices during early intervention across the United States”. Secondary data was used in this study. The data was obtained from past studies. Both descriptive and inferential statistics were used for the analysis of the data gathered.

Child expressive and receptive language abilities were rated as the most important factor to consider when determining the augmentative and alternative communication use and chronological age.

Elsahar et al. (2019) focused on augmentative and alternative communication advances. The concepts examined were imaging technologies, touch-enabled systems, mechanical and electro-mechanical access, breath-activated procedures, and brain-computer interfaces all investigated in conjunction with high-tech augmentative and alternative communication platforms for people with speech impairments. Content analysis was used to source secondary data. Results portrayed that most systems' needs and expenses prohibit widespread adoption of high-tech augmentative and alternative communication.

Swanson et.al. (2022) undertook a study titled "A communication enhancement collaborative virtual reality system for enhancing social interaction in children with autism spectrum disorder." The observation approach was used in the collection of field data. This system was found to be successfully integrated by both

children with autism spectrum disorder and their peers, enhancing their ability to build communication and collaboration abilities.

Zhao and Chen (2018) focused on “the impact of structured physical activity program on social interaction and communication for children with autism. Open-ended questionnaires and semi-structured interview guides were used in the collection of data. ANOVA model was used for the analysis of the data collected. The study discovered that a planned physical activity program for children with autism disorder improved their social interaction and communication skills.

Jailani et al. (2021) were inspired to interrogate “The awareness of mutual respect post-conflicts; ethnic Chinese strategy through social interaction and engagement in West Kalimantan”. Interview guides, documents review, and observation methods were used to gather data. The findings of the study demonstrated that via social connection and involvement, ethnic Chinese were able to successfully re-establish and develop social relationships with local people.

Ahmad et al. (2018) aimed at evaluating “The role of parental involvement and social interaction, communication, and support towards children excellence at school”. Data was collected from a sample of three hundred and ninety-one parents. Descriptive statistics were used to process data. Results revealed that social interaction had a positive role in excellence in children's performance.

Salley et al. (2019) undertook a study titled “Do communication and social interaction skills differ across youth diagnosed with autism spectrum disorder, attention-deficit/hyperactivity disorder, or dual diagnosis” The Autism Diagnostic Observation Schedule was used to look at the progression of communication and social interaction impairment in children with autism spectrum disorder and attention deficit hyperactivity disorder. Questionnaires and observations were utilized to gather

information. It emerged that social interaction had a favourable effect on children with autism spectrum condition, but had a lesser effect on children with attention deficit hyperactivity disorder.

In summary, the empirical literature showed differing results on the role of communication enhancement strategies. Most of the scholars agreed on the role that communication enhancement strategies played in improvement of communication abilities for autistic children but further suggest that more studies need to be done on strategies like AAC. Lacono et al. (2018) noted that there is need for more information on AAC to ascertain its efficacy and how it is applied. Victoria et al. (2015) noted that there is need for more research on the efficiency of visual aids to ascertain their efficacy and channel of presentation. This study interrogated the effects of visual object strategies, augmentative and alternative communication strategies and social interaction strategies on the development of communication abilities among autistic children in Nairobi City County.

Conceptual Framework

A chapter framework seeks to illustrate hypothesis interrelationships between concepts or variables. In essence, it entails a visual diagrammatic representation of the different types of variables focused on in a study. Moreover, it offers a guideline concerning data collection as it shows the variables and their indicators. Figure 2.1 shows the conceptual framework adopted in this study.

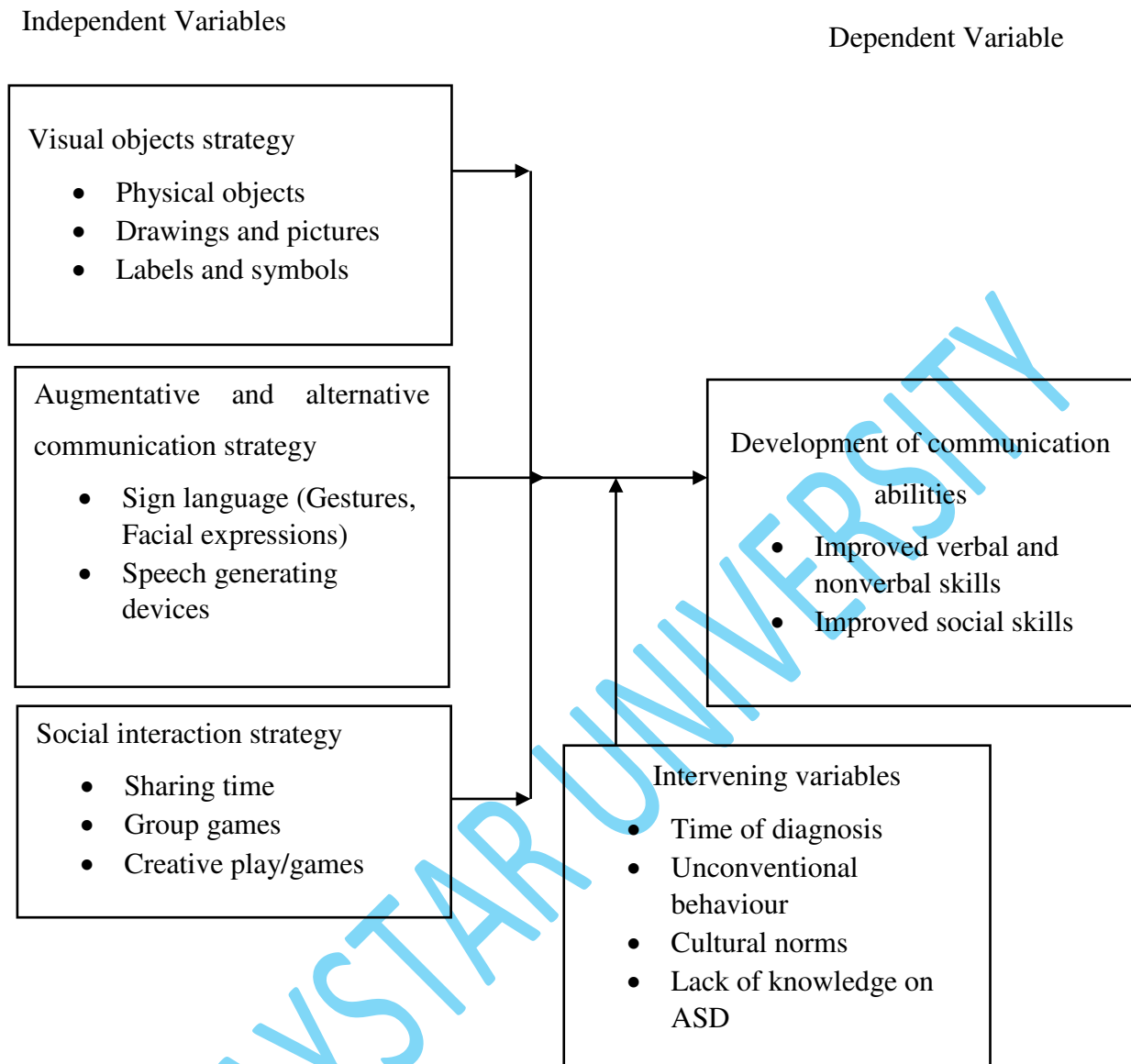


Figure 2:1 Conceptual framework

Discussion

In this study, the first objective was to investigate the influence of visual objects strategy on communication development in autistic children in Nairobi County. The second objective was to analyse the influence of augmentative and alternative communication strategy on communication development in autistic children in Nairobi County, and thirdly, to assess the influence of social interaction strategy on communication development in autistic children in Nairobi County. The independent variables were visual objects strategy, augmentative and alternative communication strategy, and social interaction strategy used by the autism centers as corporate organizations. The dependent variable was communication development. The intervening variable included time of diagnosis, unconventional behaviours, cultural norms and lack of knowledge on ASD.

Summary

This chapter delved into the literature review. The thematic areas included: theoretical framework, general literature, empirical literature, and conceptual framework. The next chapter which is chapter three which focused on research methodology. Research methodology deals with practical aspects that will be undertaken to address the problem realized in both chapter one and research gaps in chapter two. It identified the type of data, collection tools, and procedure for undertaking fieldwork.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

This section presented a discussion on research methods that entail aspects of data collection and analysis primarily to achieve the research objectives. In terms of themes, the chapter commenced with research design. Secondly, the chapter contained the population of the study, target population, sample size and sampling procedure. Thirdly, data collection instruments, types of data, data collection procedure, pretesting and data analysis plans are explained. At the end, ethical consideration and a chapter summary was made.

Research Design

Research design is defined as a step-by-step plan used by researchers to obtain data that is useful in achieving the objectives of a study (Asenahabi, 2019). Research design helps to determine the methods that will be used for collection of data and analysis. This study adopted an exploratory research design. Exploratory research design was seen as appropriate for the study because it seeks to find new ideas and knowledge about a topic that has little or non-existent information (Swedberg, 2020). In this study, exploratory research design would help to uncover and generate more information on communication enhancement strategies since there are no studies in Africa that identify agreed upon communication enhancement strategies that can be used to improve the communication abilities of autistic children.

This study adopted a qualitative approach. Qualitative research focuses on understanding and interpreting the lived experiences of people in order to make sense out of it (Gupta & Awasthy, 2021). Qualitative approach was the most appropriate for this study because it explores people's experiences, their interactions with the

social world and the meanings created out of it (Merriam & Grenier, 2019). The main focus of qualitative research is words instead of numbers (Walia, 2016). Communication is qualitative in nature as it entails processing of social cue from environmental and relaying feedback from those cues. Moreover, in the society, communication takes different forms, majorly verbal or non-verbal which in the end is measured by how well intended message is received by the recipients. At the same time, it is not straightforward to measure communication abilities quantitatively but rather in a qualitative manner. For instance, by observing how well children with autism spectrum disorder decipher social cues will offer insights on how well they have mastered the competency of communicating with others. Qualitative research strives to answer the question why and also how a situation is the way it is and this help to generate rich data thus creating an understanding of the social world (Mohajan, 2018). Therefore, the experiences of the participants in this study would generate rich data and add new information in this area of study.

Population of the Study

Population of a study comprises of individuals, organizations or groups of people that a researcher intends to understand (Casteel & Bridier, 2021). A population should possess similar traits to qualify for a study. The population for this study included special need education specialists, occupational therapists and parents of autistic children in selected autism centers in Nairobi County. These centers specifically have a programme that deals with autistic children. The population was appropriate because these individuals spend most of their time with the autistic children at home and school and therefore would provide first-hand information based on individual experiences. The autism centers used for this study was obtained from Kenya Autism Alliance Website. Kenya autism alliance is an organization that was

founded in 2011 to create awareness the autism and provide resources and information to those affected by autism in order to improve their lives (Kenya Autism Alliance, 2018). The population for this study was 29 autism centers that are in Nairobi County (Kenya Autism Alliance, 2018). Nairobi County was seen as appropriate because it is cost effective and accessible to the researcher.

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Target Population

Target population is the group that a researcher intends to choose and sample (Manchaiah et al., 2020). The target population for this study included 6 autism centers in Nairobi County selected through purposive sampling. Purposive sampling is a non-probability sampling technique that involves the selection of participants with specific qualification based on the researcher's judgement (Baldwin, 2018). The 6 autism centers were selected as the target population because of their willingness to cooperate and grant the researcher access. In purposive sampling, participants can be selected based on their willingness to give information because of their knowledge and also experience (Etikan, 2016). In addition to that, the centers contain the participants that have the specific qualifications suitable to collect data to answer the research questions for this study. Purposive sample involves the selection of participants because of qualities that they possess, and this helps to gather information that is rich and relevant to the study (Manchaiah et al., 2020). In qualitative research, it is important to utilise participants that are well conversant and informed on the topic under study. Special need educational specialists, occupational therapists and the parents of autistic children spend most of their time with autistic children at home and school and therefore would provide first-hand information based on the experiences that they have had. Figure 3.1 below shows the list of the autism centers selected for the study.

Table 3: 1 Target Population

Strata	Special education specialist	Special need	Occupational therapist	Parents/family member	Total
Acorn special tutorial	2		1	2	5
Annabelle school	2		1	2	5
Fairmile School	2		1	2	5

Kaizora institute	2	1	2	5
First steps interventions	2	1	2	5
Nairobi early intervention center	2	1	2	5
Total	12	6	12	30

Source: Kenya autism alliance (2018)

Sample Size

A sample size involves a number of representatives/units selected for a particular study (Manchaiah et al., 2020). Suggestions have been made by different scholars on how many participants a qualitative study should have. Moser and Korstjens, (2018) suggest that qualitative studies are usually small depending on the study being undertaken and not on the representatives. Pope and Mays (2020) assert that the sample size for qualitative studies are not statistically represented but strive to gain knowledge in a study. For this study, the sample size was 30 participants from 6 autism centers in Nairobi County. Cobern and Adams (2020), suggest that the number of interviews appropriate for a study should be 15-20 depending on the scope of the topic. Therefore, the sample size selected for this study was considered adequate to generate rich data on communication enhancement strategies for the development of communication abilities of autistic children.

Sampling Procedure

Sampling entails the process of statistically selecting a section from a population in order to gain representation of the total population (Majid, 2018). Specifically, snowball sampling was used to access the participants to provide the information for this study. Snowball sampling involves obtaining information from participants based on recommendations from other participants (Biddix et al., 2018). The decision to use snowball sampling technique was arrived at because the researcher did not have access to the participants and therefore will access the autism centers through the contact persons provided on the Kenya Autism Alliance website. Secondly, snowball was appropriate for the study because the topic under study is sensitive, and the participants might not be willing to participate.

Data Collection instruments

This study adopted the use interviews as well as observations as the data collection methods. Interviews are one of the main sources of data in qualitative studies (Merriam & Grenier, 2019). It was seen as the most appropriate data collection method because of its ability to collect participant's experiences and perceptions on a topic of study. Interviews endeavour to gain more insight on a topic beyond the overall observation and facts (Biddix et. al 2018). Specifically, this study used semi-structured interviews. A semi-structured interview uses a guide that contains questions, topics and probes to engage the participant in a study (DeJonckheere & Vaughn, 2019). Semi structured interviews was the most appropriate for this study because it provided the researcher with the flexibility to ask more questions in order ascertain the influence of visual objects strategy, augmentative and alternative strategy and social interaction strategy on communication development of autistic

children. At the same time, it provided a guide to avoid collecting unnecessary information.

Observation involves the collection of data about people in the natural set up. Observation helps to collect information that may be missed out when using other methods of data collection (Fix et al., 2022). Observation was done by visiting the centres for children with autism. This method of data collection was seen essential as it offered insights on the outcome of the communication enhancement strategies by observing the responsiveness of the children to the cues. Moreover, observation in this study was covert where the children participating in the study were not made aware that they are being observed. The researcher attended learning sessions and observed what took place in the learning centres.

Types of data

In this study, reliance was on primary and secondary data. Primary data is first hand and will be collected by use of interviews and observation. Primary data enables a researcher to gather up to date data that may not be possible in other ways (Boddy, 2016). This study seeks more knowledge on the effect of communication enhancement strategies on the communication abilities of autistic children. On the other hand, secondary data is data sourced by other people and are mostly used for supplementary purposes from the actual purpose (Pederson et.al. 2020). Secondary data was obtained from books, journals and research papers that have been published. Secondary data played a key role in providing knowledge for the literature review and thus a justification to continue with the research.

Data Collection Procedures

This study used physical procedures in administering the interviews to the participant where the participants were asked leading questions and responses noted

down by the researcher. Each participant was interviewed for a span of forty five minutes and this depended on their depth of information and how much they were willing to talk in order to collect data that is pertinent in addressing the research problem. An interview guide was used to gather data and information from the participants in relation to use of visual objects strategies, argumentative and alternative strategies and social interaction strategies. An interview guide is a subject guide that contains questions, themes and probes that help a researcher to direct a qualitative interview (Pope & Mays, 2020). The researcher utilized one research assistant who was trained on how to ask the questions and record the data.

The researcher communicated with the contact persons in the autism centers and inquired on the best day to visit and carry out the interviews and also the observation. The dates were scheduled and the interviews conducted at the autism centers. Observation was conducted where a special need educational specialist or occupational therapist was in a session with the autistic children. Secondary data was collected from published journals, books and research papers.

Pretesting

Pretesting the interview guide was done to gauge its reliability, validity and facilitate assembling of tools necessary in main field activity. The researcher pretested the interview guide using St Gerald's center located in Kiambu County. The collected data from the pretest was analysed and interpreted and adjustments were made on the interview guide to ensure clarity of the questions.

Data Analysis Plans

This study interrogated the effect of communication enhancement strategies on the communication abilities of autistic children. Thematic analysis was used for data analysis. Thematic analysis is a data analysis method that identifies, analyses and

interprets themes in qualitative data (Clarke & Braun, 2017). Thematic analysis was selected for this study because it is an appropriate method to use when a study wants to detect patterns in a data set based on the experiences and perspectives of participants (Kiger and Varpio, 2020; Clarke & Braun, 2017). The process entailed a series of sequential procedures that commenced with the researcher's familiarization with the data collected from the interviews. Familiarization with the data set is important because it orients the researcher to information collected and also build a foundation to the consecutive stages (Kiger & Varpio, 2020).

This step was followed by coding of the data whereby the researcher took note of the items of interest, ideas and initial information. A code is a small unit that contains features that could possibly answer the research question (Clarke & Braun, 2017). After coding of the data sets, the researcher identified identify themes. In order to come up with the themes, the researcher analysed and compared the codes to ascertain their relationship with one another. The identification of themes was followed by the reviewing of the themes which will involve the selection of the themes to be used for the final analysis. Nowell (2017), points out that taking note of the changes helps a researcher to have an audit trail of the changes and thus maintain reliability in the finding. This step was completed when all the information obtained from the interviews is input into a code sheet. The researcher defined and described each theme and the importance to the research question. Finally, the researcher provided a report on the analysis and interpretation of the data and how it answers the research question.

Ethical Considerations

Several ethical concerns were observed in this study. Foremost, data collection commenced when authority to collect data from Daystar University ethical review

board and National Commission for Science, Technology and Innovation was granted. Data collection was done in two weeks after obtaining the required permits. The participants were informed all about the study and signed the informed consent forms before beginning the interviews. Informed consent involves the participant's understanding of what a study is all about and their free will to participate voluntarily in a study (Pope & Mays, 2020). Informed consent is vital as it gives participants an informed choice before and during engagement in research so that they can decide to participate or not. Moreover, it is intended to create awareness by way of provision of information to potential participants so that they can participate voluntarily well knowing of what the research is about.

Participants were selected on free-will and granted leeway to leave at any time as it is required in voluntary participation principle of research ethics. Moreover, participants were respectfully treated to ensure that no harm befell on them. In respect to data management, all information to be gathered would be for academic purpose and participating autistic centres were made aware of this fact. The parents were informed that participating in the study would be beneficial as they will learn on communication strategies they can adopt to enhance communication for the children. Where a parent was not comfortable to participate in the study, the researcher allowed them to exit at any point. The information gathered was treated with high confidentiality. Results of the study would be disseminated following ethical concerns sanctioned by Daystar University Ethics Review Board and National Commission for Science, Technology and Innovation's permit.

Summary

The section elucidated methods and processes that are key towards the achievement of the study's objectives. In a nutshell, the chapter supported the choice of research design. Moreover, participants in the study were identified by target population, sample size and sampling technique parts. The section also discussed data types, procedures for getting observations for variables, data processing and ethical concerns. The next chapter, which is chapter four contain data presentation, analysis and interpretation, findings and recommendations.

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CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Introduction

This chapter detailed outcomes of data analysis and further focused on interpretation of the results of the findings. The analysis was in line with the objectives of the study that were stated as: to assess the influence of visual objects strategy on communication development in autistic children in Nairobi County; to analyse the influence of augmentative and alternative communication strategies on communication development in autistic children in Nairobi County and to assess the influence of social interaction strategy on communication development in autistic children in Nairobi County.

The study utilized qualitative data that was collected by interviewing participants in 6 schools or centres that offered education to children with autism in Nairobi County. The participants were categorised into three strata that composed of special needs education specialists, occupational therapists and parents or family member that was close to the child. The interviews were conducted through physical meetings with the participants. The participants were reached through snow ball sampling technique. Through this method, the researcher was able to achieve sufficient response rate. In addition to using interviews, observation was used to collect information whereby the researcher attended learning sessions and observed the special need educational specialists and occupational therapists using visual objects, augmentative and alternative and social interaction strategies on autistic children.

After the generation of data from the field through interviews, the data was analysed thematically to address the research objectives in the study. The researcher

noted the comments from the participants and later synchronised them through qualitative content analysis to come up with findings. The responses from the interviews were presented in narrative forms ensuring that key results were put across.

Data analysis and Presentation

In this section, analysis of data and the results for each objective are presented. The section begins with response rate and then analysis of results from the interviews.

Response rate

The study sample included 30 participants who included 12 special needs education specialists, 6 occupational therapists and 12 parents or members of the family with a child with autism spectrum disorder. The aim was to collect data from all the participants using interviews. The researcher attempted to reach all participants in the six autism centers but only managed to reach 83.3 % of special needs educational specialists, 83.3 % of occupational therapists and 75 % of parents or members of the household. On average the response rate was 80.53 %. In social sciences, response rate of more than 70 % is considered excellent and therefore data analysis and interpretation was done (Fincham, 2008). The schools were coded SS1 to SS6 (special school 1 to special school 6). Table 4.1 shows the response rate for the sampled participants.

Table 4: 1 Response Rate

Strata	Target	Response	Percentage (%)
Special need education specialist	12	10	83.3
Occupational therapist	6	5	83.3
Parents/family member	12	9	75.0
Total	30	24	80.53

Presentation of study findings

In this section the findings for each objective are discussed. The study findings collected from the six special needs schools/centres were given codes (SS1 to SS6).

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Interviews

The responses from the interviewees are presented in this section.

This study sought to assess the influence of visual objects strategy on communication development in autistic children in Nairobi County, to analyse the influence of augmentative and alternative communication strategies on communication development in autistic children in Nairobi County and to assess the influence of social interaction strategy on communication development in autistic children in Nairobi County.

In recap, the study had three concepts which were visual objects strategies, augmentative and alternative communication strategies and social interaction strategies. Emanating from the interviews several themes, emerged in respect to the variables of the study. Most participants indicated that visual objects that were used included physical objects, drawings and pictures and labels and symbols. On ACC strategy the most common tools were sign language, gestures and facial expressions and speech generating devices. Further, social interaction strategy was practiced through sharing time, group games and creative plays and or games. These themes are presented on Table 4.2

Table 4: 2 Framework for themes identification

Name of code	Description	Themes	Observation	Conclusion
i. Use of visual objects (physical objects, drawings, pictures and images)	Children with ASD are able to use visual objects	Visual engagements, Retention of messages, Comprehension of messages, Recollection of information. Vocabulary/language development	A vast of participants showed that visual objects enhanced engagement, interaction, improved learning and led to emotional engagements between the caregiver and the child with autism spectrum disorder	This infers that visual objects are essential in communication development of children with autism spectrum disorder
ii. Augmentative and Alternative communication (sign language, facial expressions and gestures and speech generating devices)	This is a strategy employed where speech skills are significantly compromised	Memorizing information, Comprehension of information, Understanding information. Language development Reduced repetitive/unconventional behaviours	Findings showed that ACC tools aided in encouraging responses from the children, created a means of interaction	ACC strategy enhances communication development
iii. Social interaction Strategy Codes: games, plays and socialising)	This is whether social activities are helpful in facilitating the child with autism spectrum disorder to learn how to relate and communicate with others	Acquisition of Social skills Interpersonal skills Teaches self-control Reduced repetitive/unconventional behaviours	The findings showed that social interaction improves social skills, problem solving skills and vitally improves social relations for the child	Social interaction strategy improves communication development

Influence of visual objects strategy on communication development in autistic children

The participants had been asked to comment on whether use of still images and objects like photographs, pictures and so on made it easier for children with autism to learn how to communicate. Results of interviews indicated that visual objects were an essential communication enhancement tools for children with autism.

For instance, participant 1 in SS1 said that:

All children regardless of whether they have autism spectrum disorder are attracted to colorful images and objects. This helps them to relate to what is being said to them thereby improving their motor skills. In particular, children with autism spectrum disorder are more likely to learn to communicate when they are guided on the use of objects like drawings, pictures, signs and symbols that are affixed to walls.

It therefore plausible to conclude that use of visual objects aids in enhancing communication abilities for children with ASD. Visual objects entail a wide range of objects that are used to amplify the message being conveyed from one person to another. At the same time, visual objects usage among children help in memory retention where the child is able to store the image and relate it with some message which improves their communication abilities (Kidder & McDonnell, 2017).The importance of visual objects was also affirmed by participant 3 in SS3 who responded as follows:

I find use of symbols and labels impactful because the child is able to relate to the symbols and labels as messages. When they see the symbols they act as guided by specific symbols.

Most of the participants indicated that children with autism spectrum disorder were not able to use verbal communication and this made it important to establish newer mechanisms for enhancing communication. Visual objects strategy is a means of communication that employs objects that can be seen by individuals (Mehdi et al., 2021).

Equally, visual objects are tools that seek to relate message intentions. More specifically, this type of strategy entails the use of signs, graphic designs and illustrations in order to relay messages where verbal communication is not appropriate. Moreover, visual strategy can use typography and motion pictures to relay messages. In use of visual objects, the message is characterized by color, layout and shape of the object that is used (Carol et al., 2020). The matrix of these components determines whether the message is to be relayed successfully or not.

Visual aids are useful in creating mental images that are stored for longer periods thereby enabling children with autism spectrum disorder to comprehend different types of messages. Particularly, visual aids are tools that are attractive to children of younger ages and this improves their learning on communication. Participant 6 in SS6 participant that:

Visual objects are aids to learning and often help eliminate the boredom or confusion that may be present where children are not able communicate verbally. Also, the children seemed better equipped to store images, illustration and visual aids long after the lesson was over.

In addition, participants indicated that use of visual objects was impactful as it simplified conveyance of messages. A visual aid such as a picture helps narrow down the message in a simple manner which makes it possible for children to remember the message. At the same time, use of illustrations and drawings makes it possible for children to memorize information. Communication in children is not a straightforward issue because the child environment is seldom understood (Dwivedi & Bajpai, 2023). It is for this reason that an appropriate method of relaying information is preferred.

Participant 4 in SS4 responded as follows:

Visual objects deliver information directly. With use of visual objects, the teacher is able to effectively train the learners on how to communicate in different circumstances. Also, images are user friendly as they can be memorized with ease.

It also emerged that use of visual objects as a communication development strategy was beneficial as it enabled conveyance of different messages. A visual object can be used to communicate different messages at the same time. Thus, visual objects enable quick grabbing and retention of messages thus making communication better for children with autism spectrum disorder. For instance, participant 6 in SS2 commented as follows:

Use of visual objects makes communication more effective. Firstly, an image could be used to showcase different messages. For instance, a picture can be used to train the learner on desired behavior and to identify things around the child. Therefore, the child is able to relate with the environment.

Visual objects strategies also enhanced the expression of emotions for the children which was an essential component of development of communication abilities. Use of still images, motion pictures and drawings helped create emotions that bettered communication skills (Kidder & McDonnell, 2017). The persuasion of visual objects is often more than that of verbal communication. At the same time, use of visual aids ensures that the message sparks the intended emotions as reported by participant 7 in SS5:

Visual objects clearly spark emotions. When the children are shown the objects, they get excited and facial expressions changed. By showing the children the visual aids, they respond and one can decipher their reactions from the messages.

Visual objects also seemed to be more entertaining in that the children were more responsive to the objects than they were when verbal communication was used. Pointing to images and objects was noted to be an important stress reliever for most of the children. Moreover, visual objects enable stimulation of virtual perception because children with ASD more often than not face limitation in use of verbal languages. In line with this view, visual objects enable children with ASD to understand more of

what is being communicated to them. Visual objects localize the messages so that the learner clearly deciphers the intended messages.

In use of matrix that perfectly combines local and global perceptions, children with ASD are able to learn communication skills including emotions and cognitive skills. At the same time, it emerged that visual objects acted as stimulus towards conveyance of messages where verbal communication is critically hampered.

Participant 12 in SS2 commented as follows:

Use of visual objects is essential as it makes communication an entertaining interaction between the children with ASD and those they are communicating with. It is an important tool for boosting engagement abilities for the child with autism spectrum disorder.

Further results showed that whilst children with ASD faced several impairments that inhibited normal growth in respect to cognitive, language, social interactions and executing of tasks, use of visual aids led to better chances leading normal lives for the children. In other words, visual aids improve the ability of children with ASD to communicate and interact with other members of the societies. In some cases, the ASD children have strong visual perceptions which makes use of visual aids appropriate strategies for enhancing communication. This was agreed on by participant 23 in SS7 who responded as follows:

Children with ASD have strong visual abilities which in a way works to cover the challenges occasioned by lack of speech. Also, the children are hyperactive when it comes to images and this is common with ASD at early ages. Indeed, children with ASD have higher visual detection abilities and this makes use of visual aids an important component in improving their communication abilities. This is basically to suggest that their central coherence works well where visual objects are used. In other words, images help children with ASD to integrate what they are seeing and relate to the message conveyed.

Although the study revealed that use of physical objects, drawings, objects, labels and symbols, their effectiveness was dependent on some other factors. For

instance, proper and early diagnosis of ASD influences how well any strategy works in development of communication abilities for ASD children. The difficulty in speech by children with ASD has been recognized as a neuro-deficiency syndrome which may fail to be identified at early stages. The children with ASD face communication challenges. Where timely interventions are not made, the communication abilities for children with ASD are highly impaired. Participant 19 in SS4 indicated that:

My child was leading a normal life and it was only realized that he was autistic when he delayed in speech at the age of two years. This has greatly hampered his ability to learn specialized communication mechanisms. I believe if this was diagnosed at early stages, we would have adopted new strategies sooner than later.

Equally Participant 16 noted that:

Communication is a complex system which entails synthesis of information from various contents. In this aspect, children with autism spectrum disorder find it difficult to integrate all components of the message.

Overall, it is evident that visual objects are essential in development of communication abilities among children with autism. Visual objects come in handy where verbal communication is compromised and therefore is a crucial component of communication enhancement strategies. This finding indicates that visual aids boost communication abilities for the children with ASD. This result collaborates with those of Kurniati and Yusuf (2019) who voiced that visual aids are essential in development of socio-emotional functioning of children with ASD. Moreover, use of visual objects enhanced visual attention to images thereby enabling children to learn a language of communication (Elza, 2019).

Augmentative and alternative communication strategies on communication
development in autistic children

The participants were asked to comment on how they viewed use of gestures facial expressions and speech generating devices in enhancing communication abilities among children with autism. There are two sub-categories of ACC; aided or unaided whereby the former entails the use of hand signs or gestures together with equipment to enhance and support speech while unaided ACC which does not use any objects or equipment in the development of speech apart from sign language (Lorang et al., 2020). Most of the participants agreed that the use of the gestures and facial expressions was significant in enhancing communication abilities among the children with autism. This is because, children with autism spectrum disorder had difficulties in using and understanding spoken or verbal languages. The findings of the study showed that use of sign language made it easier for an ASD child to develop communication. Participant 15 in the SS6 commented that:

The use of the gestures promotes the child's overall communication development. It aids teachers in explaining and evaluating the communication abilities of children. Also, it aids children with autism in remembering material, and facilitates quicker problem-solving.

Augmentative and alternative communication strategies aim at creating signs which individuals can relate with certain specific messages. Aided are tech-enabled communication strategies where the communicator uses gestures and objects to match the messages. For instance, a communicator can use a photo and a hand sign to convey the intended message. On the other hand, unaided augmentative and alternative communication strategy does not have any equipment. The communicators only use gestures and signs to relay messages.

The use of the gestures is therefore important in the overall development of the child communication. People can express a wide range of emotions and ideas

through gestures, from hate and antagonism to admiration and tenderness, frequently in addition to verbal communication. A gesture is an essential part of language that enriches spoken communication with unique and significant information while also reflecting the speaker's background knowledge and life experiences (O'Rourke et al., 2022). Children who lack social skills struggle to communicate with others, express themselves verbally, and read body language. A child who possesses the proper set of social skills will find it simpler to make friends, share with their classmates, and collaborate in social situations. Participant 13 in SS4 indicated that:

Use of gestures is effective way in teaching my child to communicate for several folds. Firstly, I have noted that when I use gestures and attach the object to it, my child is able to respond positively to the message I am relaying. Moreover, the child is able to reply by showing similar gestures. It is also easier to repeat the signs to the child so that the information can be understood. Lastly, I believe signs and gestures, the child can memorize them.

The participants were also asked the specific augmentative and alternative tools they had noticed to be effective in enhancing communication abilities for autistic children and how they functioned. In essence, speech generating devices are technological devices that are used where the children have acute speech deficiencies. These tools are electronic in nature and take the form of personal computers to input images that can be used to communicate to individuals with inability to communicate. The speech generating devices were found to be effective and enhanced the communication abilities among the children with autism. Participant 4 in the SS1 responded that:

Speech-generating devices are hand held electronic devices that play words or phrases in response to the user's touch, button press, or keystroke. Some gadgets 'speak' words as they are entered on a keyboard.

Furthermore, results showed that aided use of speech generating devices improved communication abilities for children with autism spectrum disorder. The devices store voice for words and phrases which the users can playback as they need.

Therefore, the devices must be programmed in a way that the users can decipher the content of words and phrases to get the intended messages. The participants indicated that the speech generating devices were important devices among the autistic children. When compared to speech and gestures alone, the gadget can enable people express a larger variety of words, thoughts, and feelings. Speech-generating technology is crucial for those who have few options for verbal communication since it enables users to actively participate in conversations. Participant 16 in SS5 commented that:

I understand that a tablet or laptop that facilitates communication for someone with speech or language difficulty is known as an augmentative and alternative communication device. Whereas there are different types of speech generating devices, the most common are static and dynamic and they aid in getting words and phrases for someone with speech difficulties.

As per the ongoing discussion, various tech-devices are available for speech enhancement. For instance, a low-tech augmentative and alternative communication device might use straightforward images like pictures, boards, drawings and communication binders. In this case, an autistic child might use the low technology AAC to ask for an item by handing it to the parent or professional or pointing it. Children can use an AAC device for a brief period of time while their speech abilities are developing or for the rest of their lives. AAC communication has many positive effects on all facets of life. It can enhance AAC users' speech, language development, communication, and literacy, as well as the standard of living in general.

Using augmentative and alternative communication to improve the communication ability of autistic children involves three components namely symbols, transmission devices and selection techniques. Some participants commented on unavailability of transmission devices especially medium and high technology AAC. Medium technology device involves a voice output communication aid that utilizes electrical means to give digitized speech whereby the user is required

to press on the picture or symbol showing on the device which in turn produces words about the displayed symbol (Nunes, 2015). High technology AAC include more advanced speech generating devices or tablets, ordinary computers and phones that can have software installed for example communicate (Nunes, 2015). Participant 20 in SS5 commented that:

Some of the speech generating devices are quite expensive and mostly can be used in centers that can acquire them but not in homes. In addition to that, some are complex and require a specialist to operate them. Personally, I have used the low technology AAC which is easily accessible by use of images or my phone.

Equally participant 22 in SS2 noted that:

I agree that augmentative and alternative communication has the potential to improve communication for autistic children but overlying on it can also have challenges of hindering interaction. It is important to strike a balance by using aided and unaided AAC and also consider other ways of developing the child's communication depending on their capability.

AAC is a multimodal strategy that involves the combination of two or more interventions to improve functional communication in autistic children. Participant 24 in SS6 commented that:

My daughter learnt to communicate using AAC. I started by showing her pictures and names and after repeating for a while she started repeating the words. At the same time, I taught her simple instructions using sign language. After grasping the names, I moved to recorded videos on YouTube that would show the images and also the names. I gave her screen time everyday where I would put for her educational videos. Now she speaks good English and only thing remaining is her theory of mind where she is able to recount events of the past.

The participants also were of the view that use of gestures and sign as means for speech therapies was common. The results showed that signs were used where a child had substantially failed to understand spoken language. Participant 24 in SS5 commented that:

I have a child who is completely nonverbal. I had to learn the use of sign language in order to communicate with her. At least now I am able to understand her and what she wants.

Equally participant 4 in the SS1 noted that:

When dealing with nonverbal autistic children, training them on using simple sign language can help them learn to communicate and also follow instructions including class routines. It also plays a key role in enabling them express what they need.

Use of gestures therefore is an appropriate mean for enabling children with autism spectrum disorder to understand and interact with their world. For example, a child may raise their hands when they see something they like. These findings are in agreement with those of Ascari et al. (2018) who that signs are an integral component of communication enhancing strategies.

The study also found out that the choice of augmentative and alternative communication strategy dependent on the challenges that an autistic child was experiencing. Where a child was noted to have impaired communication abilities at later ages, therapists employed a mixture of visual objects and ACC strategies to boost their communication abilities. Responses suggested that ACC devices were instrumental in bettering the way children with ASD relayed their thoughts, needs ideas to the world around them. More importantly, augmentative communication strategies help in communication where interpersonal communication through verbal acts. In light of this view, gestures and other signage acts are used to effectively enhance efficacy of communication. At the same time, ACC techniques are considered naturalist intervention strategies that enhance communication abilities (Lorah et al., 2022). Participant 3 in SS3 noted that:

ACC techniques are important as they take a natural outlook at the challenge in spoken language for children with ASD. Parents, teachers and other family members can use them in training children with ASD to communicate. Moreover, there are low-cost tools than can be improvised at home and this improves communication for children with autism spectrum disorders.

Social interaction strategy on communication development in autistic children

The participants were also asked to comment on how they perceived use of social interactions such as games and sharing time in enhancing communication among children with autism. Vast majority of the participants agreed that social interactions enhanced communication among the children with autism. A social relation is the basic analytical unit that defines any voluntary or involuntary interpersonal relationship that exists between two or more people either inside or between groups. Therefore, social interaction enabled children with autism spectrum disorder to interact and shared with the world around them. To put this into perspective, autism is a neurodevelopmental disability that inhibits reciprocal social communication and interactions. Participant 1 in SS1 commented that:

Children with autism spectrum disorder frequently struggle with social contact and communication, and they can have repetitive or constrained habits or interests.

More revelation from the results showed that social interaction was important as it helped to solve the struggle among the children with autism with social contact and communications. Therefore, social interaction strategy is a critical component that enhances communication abilities. This is because it ensures that children with ASD are able to offer reciprocity by responding to cues from the world around them. Additionally, these abilities can strengthen family ties and provide an autistic child a sense of inclusion. Additionally, a child's mental health and general quality of life depend on their ability to interact with others.

While some autistic children have excellent communication skills, others have trouble connecting with and conversing with others. Additionally, some autistic children struggle to acquire language, have trouble understanding or using spoken language, or have no language at all. Playing games is an excellent way to learn about

social cues and actions. With a variety of board games, online games, and other enjoyable activities that kids with ASD can partake in with friends, family members, and caregivers, games themselves are frequently an opportunity for socialization practice. Notably, social skills are essential in leading a healthy lifestyle. Participant 18 in SS4 responded that:

We constantly advise parents and other caregivers to include games in their day to aid autistic youngsters with their social skills. In this aspect, games help the learners to interact with others and they feel part of their communities. Moreover, social interaction strategies teach about social skills, responsibilities and self-control in dealing with other children.

Findings also revealed that playing video games gives autistic children the chance to interact with their classmates and share interests. Children with autism can practice both what they already know and what they don't through play. Through trial and error, they can experiment to solve issues, figure out the most effective tactics, and develop new confidence and skills. Moreover, it emerged that video games helped them learn more non-verbal cues in dealing with the environment around them. For instance, participating in structured games activities enabled the children with autism spectrum disorder to relate with others in a confined environment. Participant 18 in SS6 revealed that:

Video games are essential as they help in building interpersonal skills among the children thereby improving their social skills. Also, playing other physical games enable children with autism to relate with other non-autistic children in their communities.

The responses from interviews showed that social interaction mechanisms instrumentally improved communication for the children with autism. A vast of the participants noted that social interaction bettered the social skills for the children. Participant 4 in SS4 noted that:

When autistic children join school, they are normally antisocial and some of them even injure themselves by knocking their heads on the wall or scratching

others and this limits social interaction because no one wants to be around them. I have helped children to gain social skills through group therapy. At first, it seems hard but the trick is to keep repeating the process until it becomes a routine.

The findings agreed with those of Davis and Crompton (2021) who viewed that autism spectrum disorder has been traditionally been conceptualized to lead to deficits in social interaction and communication. This is because, individuals with autism tend to have challenges in cognitive abilities that limit their ability to establish, maintain and understand social communication.

The findings of the study too revealed that there were underlying differences between the difficulties that children with autism faced while trying to socially interact. These differences are caused by the differences in neurotypes that vary from one person to another. For instance, some autistic children had different social communication difficulties while others had communication challenges or both. Hence, in addressing social communication challenges, each child should be attended individually so that desired results are achieved. Again, some children with autism spectrum disorder displayed social disinterest and this made it more challenging in teaching them how to communicate and socialize. This finding was echoed by participant 19 in SS3 who indicated that:

My child does not want to socialize with others. Besides, where she is forced to be with others, she does not relate with well and this does not work out well. Instead, she likes playing alone while keeping her space.

In overall, it emerged that social interaction strategies were important in enhancing communication skills for children with autism spectrum disorder in the special schools that participated in the study.

We have a structured a learning environment for autistic children whereby we train them on social skills which plays a big role in encouraging communications development.

Moreover, it was found out that social interaction strategies too enabled the children to interact with others in their communities. By participating in social activities, such as games and plays, the children garnered social communication and interactive skills that enhanced their lives.

In addition, social interaction helped in lowering the repetitive behaviors that could be injurious and compulsive. Therefore, social interaction is a good way of addressing the anxiety that is often associated with autism. In essence, social communication challenges are not only common to individual with ASD but also to other non-autistic people. Due to lack of social communication abilities, individuals are not able to relate with others and this limits their chances of enjoying social activities with other members of the society.

Observation analysis

Influence of visual objects strategy on communication development in autistic children

The sessions were conducted over a period of two hours and involved the special need educational therapist using picture cards, images and physical objects to help the autistic children learn the vocabulary and also follow instructions. In a session in SS1 involving a special need educational specialist and 6 autistic children, it was observed that 4 of the autistic children showed attempts to communicate including the use of vocalization. The researcher observed that the autistic children were more drawn to visual objects which encouraged them to try and initiate conversation. It was also observed that some of the ASD children showed that they understood the words that were spoken when they were shown the visual objects. This was observed especially when they were given instructions.

In a session involving 3 autistic children and a special need educational specialist in SS3, it was observed that using images and objects helped to reduce unconventional behaviors which included throwing tantrums and self-harm. The autistic children seemed not to understand what the special need educational specialist was communicating and continued with their repetitive behaviors until when they were introduced to the visual object. It drew their attention and therefore reduced the repetitive behavior. The autistic children were able to comprehend the information that was passed to them using the images. In addition to that, they were able to express what they needed and this helped to reduce their frustrations.

Augmentative and alternative communication strategies on communication development in autistic children

The researcher attended various sessions that involved a special need educational specialist and autistic children using aided and unaided AAC strategies. In a session in SS1 involving 6 autistic children, it was observed that 2 autistic children were completely nonverbal and therefore were more receptive to the use of sign language which included gestures and facial expressions. 4 of the autistic children showed attempts to communicate and express themselves using gestures and facial expressions. It was observed that they repeated the signs and gestures that they were shown.

An observation session was also conducted in SS6 which included 5 autistic children and a special need educational specialist. First and foremost, the researcher observed that all the autistic children had challenges with maintaining eye contact and were involved in repetitive behaviors which included continuously knocking hands on the desk, stimming, echolalia and moving around the room and it proved challenging to introduce speech generating devices to them. In addition to that, the speech generating device required the special need educational specialist to concentrate on

one child and train him or her and this made the others impatient and frustrated. Nevertheless, when the sounds of the devices were played, it seemed to capture the attention of the children and it helped minimize the repetitive behaviors. The children also wanted the exact sound to be played over and over again and in the end, it was noted that some of the children repeated the words.

In that session, it was observed that some autistic children did not react to the speech generating devices but were keen on the use of images, pictures and physical objects which fall under the low technology AAC which are non-electronic in nature and include pictures, boards, drawings and communication binders (Lorang et al., 2020). It was observed that the use of low tech AAC provided a means of communication for the autistic children and it also helped them to follow instructions and also communicate their needs. It was observed that the autistic children were able to express themselves using the images and pictures even though they struggled with communicating verbally.

Social interaction strategy on communication development in autistic children

The researcher attended a group therapy session in SS2 involving four autistic children seated round a table playing a game using plastic rings of different colors. It was observed that at first ASD children were not patient enough to wait for their turn to hold the ring and put it on a wooden pole. The children seemed frustrated but the occupational therapist insisted on them sitting down and waiting for their turn. After around three rounds, it was observed that the children understood the aspect of turn taking. In addition to that, the colors of the rings were said out loud as they put it on the wooden pole. It was observed that the autistic children showed cooperation in engaging in activity and also showed communication attempts when asking for the ring and also shouting the colors.

In SS2, the researcher attended a session that involved 6 autistic children playing different games like peekaboo, singing and also floor time. It was observed that the autistic children showed an increase in cooperation and the games encouraged problem solving and also collaboration. ASD children also showed interest in social engagement. They also showed interest in initiating interactions and also used verbalizations with their peers.

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Summary of Key Findings

The study was conducted to interrogate the effects of communication enhancement strategies on the development of communication abilities among autistic children in Nairobi County. The study findings showed that visual objects strategies, augmentative and alternative strategies and social interaction strategies had a positive impact on the development of communication abilities of autistic children. The key findings of this study echoed what the primary data revealed. In most of the studies done in the past, communication enhancement strategies were found to better communication development for children with autism spectrum disorder. This finding aligned with Kaiser et al. (2017) who noted that communication interventions among ASD children promote social skills and enable young children with autism to live fulfilled lives.

The study found out that visual objects strategies provided essential tools of communication for autistic children. It also showed that visual objects provided alternative mechanism of communication where autistic children attained an opportunity to comprehend messages, relate information and communicate their needs. The study found also that visual objects helped to visually engage autistic children and enabled their message retention. In addition to that, visual objects helped to localize the messages thus enabling the autistic children to decipher the messages thus improving their ability to communicate. It is evident that visual objects are essential in development of communication abilities among children with autism. Visual objects come in handy where verbal communication is compromised and therefore is a crucial component of communication enhancement strategies. This finding indicates that visual aids boost communication abilities for the children with ASD.

The study found out that ACC communication enhancement strategies were instrumental in bettering the way children with ASD relayed their thoughts, needs and ideas to the world around them. More importantly, augmentative communication strategies helped in communication where interpersonal communication was a challenge through the use of no verbal acts. Specifically, the study found out that gestures and facial expressions was significant in enhancing communication abilities among the children with autism. This is because, children with autism spectrum disorder had difficulties in using and understanding spoken or verbal languages. The study also found out that the choice of augmentative and alternative communication strategy was dependent on the challenges that an autistic child was experiencing. Nevertheless, the study found out that speech generating devices were found to be effective and enhanced the communication abilities among the children with autism.

Children with autism spectrum disorder face challenges in socializing with other peers and members of their communities. In this view, it emerged from literature that caregivers have adopted selective social activities that aim at improving social interactions for children with ASD. Due to inability to communicate in speech, children with autism spectrum disorder were trained by use of non-verbal tools that improve their communication abilities and encourage independence. The study found out that social interaction enhanced communication among the children with autism. It also found out that social interaction strategies enabled the children to interact with others in their communities this learning social skills. By participating in social activities, such as games and plays, the children garnered social communication and interactive skills that enhanced their lives. In addition, social interaction helped in lowering the repetitive behaviors that could be injurious and compulsive.

Lastly, it emerged that interventions done to promote communication development for children with ASD are based on the concept of imitation. In light of this view, children with speech impairment are trained to communicate through imitation. Imitation is a vital tool that assists children with ASD to acquire social and learning skills. Literature indicates that two forms of imitation occurs: spontaneous imitation and elicited imitation where the former refers to natural copying that individuals do as they interact. Elicited imitation is induced and is more often an intervention due to delayed speech and or deficiency in speech (Kenza et al., 2023; Ardi et al., 2020).

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Summary

In brief, this chapter presented the findings for data analysis in thematic forms that addressed the major aims of the study. Data analysis was done using thematic qualitative content analysis where responses were analyzed in narrative forms to meet the objectives of the study. The findings showed that the most beneficial strategies that enhanced communication abilities for children with autism spectrum disorder, then social interaction strategies and augmentative and alternative communication strategies. The next chapter focused on discussing the results, making conclusions and recommendations in respect to the results of the study.

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CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the discussions of results, conclusions and recommendations that emanated from the outcomes of the study. In retrospect, this study was sought to answer the following questions; what is the influence of visual objects strategy on communication development in autistic children in Nairobi County, what is the influence of augmentative and alternative communication strategy on communication development in autistic children in Nairobi County and how does social interaction strategy influence communication development in autistic children in Nairobi County?

Discussion of key findings

The first objective of the study sought to assess the influence of visual objects strategy on communication development in autistic children in Nairobi County. Visual objects were proxied by use of physical objects, drawings and picture and labels and symbols. The findings of this study suggest that visual objects provide opportunities for children with autism to relate with the environment surrounding them and find ways to express themselves especially where verbal communication is compromised. These findings are in agreement with Putri et al. (2018) who noted that visual objects play a role in improving communication abilities for autistic children by showing them what is expected of them using visually. Globally, it was noted that use of visual objects as a strategy for communication was a subtle intervention that developed communication in children with autism spectrum disorder (Victoria et al., 2015). Most of the countries outside Africa are already cognizant of the needs of ASD

children and therefore have research conducted on visual objects as a strategy to promote development of communication of autistic children.

Physical objects/ drawings and pictures and communication development

The study findings showed that physical objects were widely used as a form of communication aid for children with autism in the special schools that participated in this study. Most of the special educational specialists, occupational therapists and parents of children with autism spectrum disorder appreciated that visual aids were instrumental in boosting communication development for the children. These findings are an exhibit that visual objects strategies are useful because of the capability to improve communication development for children with autism spectrum disorder. The findings showed that visual aids have the potential to boost coherence where the child with autism is able to relate well with the environment. These findings relate to Kidder and McDonnell (2017) who noted that visual objects usage among children help in memory retention where the child is able to store the image and relate it with some message which improves their communication abilities. The child is able to decipher the message contained in the objects.

Use of physical objects, drawings and pictures turned out to be a common tool that was used to train the children with autism on communication. Foremost, it emerged that use of physical objects improved communication where nonverbal communication was not available. It offered a concrete way of assisting children with autism to relate with other members in their communities. The findings of this study in respect to use of physical objects and pictures agrees with those of Putri et al. (2018) who found out that picture communication was instrumental in enhancing communication among children with autism. In essence therefore, use of physical

pictures and objects creates a way for children with autism to hasten communication. For instance, there is tactile communication which relates to touching of physical things. Children can learn to communicate by touching physical things. Moreover, this finding is consistent with the findings of Lorah et al. (2019) who revealed that teaching objects are instrumental in teaching children with autism spectrum disorder and visual impairment to learn to communicate.

Whilst, not all children with autism spectrum disorder face challenges in speech, most are unable to use words to communicate and this makes it imperative to use other forms of communication. Similarly, Bani (2019) noted that non-speaking autistic individuals are able to write or use objects to convey messages. Hence, the role of physical objects in enhancing communication among children with autism spectrum disorder cannot be overlooked. Equally, Amanda et al. (2018) noted that use of visual representation better communication for children. This is because physical objects cover for shortfall that exist where children with autism are unable to speak or show delayed speech.

Use of labels and symbols and development of communication

The results showed that labels and symbols were also in use where trainers and parents developed low-cost labels to facilitate training the children with autism spectrum disorder. Labels and symbols are figurative images that has distinct messages and are used where spoken language is critically impaired. Thus, a consequence use of symbols also improves the socializing skills of the children with autism. Various discourses have shown that use of symbols and labels tends to lower the mal-adaptive behaviors that is common with children with autism spectrum behaviors. Rutherford et al. (2020) agrees with this finding by noting that the use of

labels and symbols promotes independence, helps in supporting communication and also reduces anxiety which reduces problematic behaviors. Labels and symbols offer a figurative language to non-speaking individuals because the individuals are able to relate images with specific messages. In a broader sense, labels and symbols are images that are used to map messages between two individuals.

The study found out that labels and symbols are effective in relaying messages in that the individual can relate specific message to the message. For instance, there are abstract labels that convey messages on danger or happiness which are used to communicate with children with autism spectrum disorder. The findings of this study is consistent with those of Rutherford et al. (2020) who reported that use of labels and symbols offers subtle therapy to children and adults who do not have speech. This shows that labels and symbols serves to offer mediums for communication between individuals who do not possess speaking skills.

The second objective of this study sought to analyze the influence of augmentative and alternative communication strategies on communication development. The study found out that augmentative and alternative communication strategies are used to enhance communication development among the children with autism spectrum disorders.

Use of sign language is not only confined to autistic individuals but also is used to communicate to people who have hearing impairment. It is also used by speaking individuals where speech is compromised, for instance, in a noisy environment. The main underpinning condition of individuals with autism spectrum disorder was impairment of speech due to disability in neurodevelopment. This makes use of sign language and gestures vital in support of communication where speech

cannot be used. This finding that use of sign language aids in communication development of children with autism spectrum disorder is consistent with the study done by Ascari et al. (2018) who found out that sign language assist in communication where children with autism spectrum disorder have impaired speech. Moreover, sign language has been standardized which makes a person who is not able to use verbal communication able to communicate regardless of the environment. The study too noted that gestures and facial expressions were used to relay messages. Gestures and facial expression were more profound in relaying emotions giving children with ASD opportunities to learn interpersonal skills. The findings align with the study done by Nunes (2015) who noted that augmentative and alternative communication strategies were important in enhancing communication development for children with autism.

The study's results indicate that use speech generating devices bettered speech for those children with difficulties in spoken languages. For instance, speech generating devices are useful in both instances where there is complete lack of speech or speech deficiencies. Participants showed that use of speech generating devices offers children with speech difficulties with opportunities to participate in social interactions. Speech generating devices aid in input of cues which in turn generate electronic voices that is used to relay information. This finding aligns with the finding of the study done by Wendt et al. (2019) who identified that SGDs offer ancillary communication media for individuals with autism spectrum disorders. One peculiar contribution of speech generating devices is that they provide input and output that synthesizes speech among individuals with difficulties in speech. In this view, speech generating devices enable pairing of graphic and spoken symbols which in turn enable

development of language. Goldstein and Bourque (2020) note that these devices are portable and have many functionalities.

The results also showed that speech generating devices were not common as they were expensive and had limited recording powers. In addition to that, some of caregivers did not know how to use them. At the same time, use of the devices was not free from risks as it could result to self-injurious behaviors. This study findings agrees Elshahar et al. (2019) who noted that the use of speech generating devices needs and expenses prohibit widespread adoption of high-tech augmentative and alternative communication. Nevertheless, a vast of the participants agreed that ACC strategies were effective if used under the supervision of a specialist.

The third objective of the study sought to assess the influence of social interaction strategy on communication development in autistic children in Nairobi County. The study found that social interaction strategies were used to boost communication development for children with ASD. The study also found out that social interaction strategies immensely enhanced communication abilities for children with autism spectrum disorders. The study noted that use of creative games, playing games together and sharing time in group games bettered communication skills.

All social interaction was noted to be purposeful and created opportunities that enabled the children to relate well among themselves and with other non-autistic individuals. These findings are in tandem with Gilson and Carter (2016) who noted that social interaction strategy entails enhancing positive behaviors through the use of organized activities in order to enhance communication. Social skills relating to social communication and social interactions were impactful towards enhancement of communication skills for children with autism spectrum disorders as it enables them to relate well with other members of the society. This finding relate to Skoufou (2019)

who noted that social skills contribute to the creation of a bond or relationship between autistic children and people around them through the use of verbal and non-verbal communication. It therefore means that where social interactive measures are used as interventions, then the child was likely to improve his or her communication abilities. The overarching difficulty that faces autistic individuals is the inability to understand and maintain social communication. Zulkefli and Rabi (2018) agree with findings by noting autistic children experience a deficiency in social interaction whereby they lack the skills to engage with people in social settings and read nonverbal communication for example facial expression. Thus, as a consequence, the autistic individuals are not able to engage in socializing activities in their communities.

In essence, social skills improve communication, cooperation, empathy, engagement and self-control by the children with autism spectrum disorder. In the light of this observation, social interaction strategies aided in promoting communication. Moreover, social interaction promotes stimulation of vestibular systems which better body movements. For instance, participating in games, children with autism were noted to develop abilities to learn and adjust to new cues in the environment. The study findings are in agreement with Zhao and Chen (2018) who discovered that a planned physical activity program for children with autism disorder improved their social interaction and communication skills.

In overall, therefore, social interaction had a positive impact on communication development for children with autism. The findings of this study are consistent with those of Crompton and Davis, (2021) who delved into elucidating and found out that social interaction was an important aspect of developing communication among autistic individuals. This was noted to be the case because

social interaction enabled individuals with autistic trait interact with others building their interpersonal skills.

Moreover, increased social interaction was associated with an increase in communication skills. It is important to note that social interaction is essential to all individuals regardless of whether they are autistic or not. A recent study by Hadwin et al. (2021) found out that engaging children with autism spectrum disorder in plays and games improves their motor and cognitive skills.

Discussion of findings from observation

The first objective of the study sought to assess the influence of visual objects strategy on communication development in autistic children in Nairobi County. The study findings showed that the use of visual objects which included physical objects, drawings, picture, labels and symbols increased the ASD children attempts to communicate and also initiate conversation due to the visual engagement. The implication of this findings is that use of physical objectives, drawings and pictures is vital in teaching children with autism spectrum disorder to communicate and can be used to develop communication. The findings of this study are consistent with Gilson and Carter (2016) who noted that special strategies such as visual cues and social interactions are used to improve the learning and communication abilities of ASD children.

Furthermore, the study findings showed that visual objects helped to reduce unconventional behaviors as the children were visually engaged. The study findings showed that autistic children had challenges understanding what was being communicated and also what was expected of them and this contributed to them being confused and frustrated. Therefore, visual objects enabled the comprehension of information and simplified concepts. This observation agrees with Kidder and

McDonnell (2017) who note that visual objects strategy increases opportunities for learning communication and comprehension of information in situations that may be stressful. The researcher noted that positive impact was achieved by using both words and visual objects simultaneously which was a way of reinforcing what was being communicated. This made it easier to capture the children's attention at the same time helped them understand what was being communicated to them.

The second objective of this study sought to analyze the influence of augmentative and alternative communication strategies on communication development. The study findings showed that AAC has a positive effect on communication development of autistic children. It showed that nonverbal autistic children showed a positive response to the use of sign language because it provided them with a communication means because verbal communication was a challenge. Furthermore, the findings indicated that the use of sign language strengthened the autistic children's vocabulary as they were able to associate the sign language with the words and this led to communication development and retention of information. These findings show that AAC has the potential to encourage attempts of communication and also expression of language to make requests and follow instructions by using gestures and facial expressions. These findings align with the study done by Nunes (2015) who noted that augmentative and alternative communication strategies were important in enhancing communication development for children with autism.

The study findings showed that speech generating devices were not common and needed a specialist to operate them which sometimes meant concentrating on showing one child how to operate which led the others being impatient. These study findings are in tandem with Elshahar et al. (2019) whose study results portrayed that

most systems' needs and expenses prohibit widespread adoption of high-tech augmentative and alternative communication. It was therefore noted that the use of augmentative and alternative communication strategy should be tailored based on each child's preferences and needs and it was the responsibility of the special need educational specialist to give guidance on the use.

The third objective of the study sought to assess the influence of social interaction strategy on communication development in autistic children in Nairobi County. The study found that social interaction strategies were used to boost communication development for children with ASD. The study findings showed that social interaction strategy had a positive impact on social skills with autistic children showing increased interest in initiating interactions. This finding aligns with Skoufou (2019) who noted that social skills contribute to the creation of a bond or relationship between autistic children and people around them through the use of verbal and non-verbal communication. The study findings also showed an increase in attempts to communicate using gestures and also vocalizations. It was observed that the autistic children showed an increase in cooperation and also sharing with others. These findings are in tandem with Dwivedi and Bajpai (2023) who state that the use of play helps autistic children to avoid self-absorption and share with others. The use of ordinary tools such as toys and also games helps to create engagement between the autistic child and the professional or parent and this helps to improve communication and create familiarity.

Theoretical and practical implications

The findings of the study are in tandem and give life to the propositions of the symbolic interactionism theory. Foremost, the study's findings were that communication exist where there are symbols which two parties are able to interact.

In view of this, communication involves the interpretation of symbols. The theory describes people's interactions and how it contributes to the creation and maintenance of a society with particular focus on symbols as the means to interact (Mardon et al., 2021). Moreover, the theory indicates that all forms of communication, regardless of whether it is verbal or other forms are essentially symbols because parties must interpret them to decipher meaning. The study's findings indicate that use of visual objects, augmentative and alternative communication and social interaction are strategies that utilize the concept of symbolic interactionism theory. As per the theory, a symbol is anything around an individual that the individual interprets to behave in a certain way. Major symbols in a societal setup include words, language, events, gestures, objects, and images (Leveto, 2018). From the study, it emerged that non-verbal symbolic tools were used and turned out to be of benefit to communication development among children with autism spectrum disorder in Nairobi County.

In terms of practical implications of the findings, this can be elucidated in three folds. Firstly, the study's findings evidenced crucial role of non-verbal communication strategies to improve communication for individuals without speaking abilities. Therefore, the study is relevant to caregivers, parents, schools and policy makers as it offers insights on interventions that can be undertaken to enhance communication development for children with autism spectrum disorders. Secondly, the study opens a new frontier in studies on autism spectrum disorders in Kenya. The issue of autism spectrum disorder is seldom studied and therefore this study has set a foundation to which scholars and policy makers can undertake research so as to establish a framework for bolstering communication for autistic individuals.

Lastly, there is lack of effective interventions on the side of government to assist in the issue of autism. Therefore, this study creates awareness on issue of autism

spectrum disorders. The public too can get important information on autism. Autism spectrum disorder characteristically entails mental health problems that limit the ability of autistic children to relate, learn in school, acquire knowledge and access job opportunities more than their counterparts (Taryadi & Kurwanian, 2018). Understanding this, would drastically eliminate the stigma that some members of the public have on individuals with autism spectrum disorder.

Conclusions

From the findings of the study, it was evident that various communication enhancement strategies were employed to boost development of communication abilities among children with autism in Nairobi County. These strategies included use of visual objects, augmentative and alternative communication and social interaction communication strategies. The study concluded that there was a positive effect of use of visual objects on development of communication abilities for children with autism spectrum disorder. This means that physical objects, drawings and pictures and labels and symbols were important visual objects that improved communication abilities for children with autism.

The study also concluded that use of augmentative and alternative communication strategies was essential in boosting communication for children with autism. The study noted that the most common ACC tool used were use of sign languages and speech generating devices. Of these, use of gestures, hand signs and facial expressions was noted to be the most prevalent tool adopted by the participants.

The study also concluded that social interaction strategy was used to better communication abilities for children with autism spectrum disorders in Nairobi County. Based on the findings, the study further concluded that social interaction strategy was pivotal in enhancing communication abilities for children with autism.

The results showed that social interaction strategies helped the children gain social skills that enabled them to relate with others in the world around them. Moreover, social interaction was noted to better functional skills for the children and this translated to enhanced role playing in their communities.

Recommendations

The study made the following recommendations:

The study recommends proper and early diagnosis of ASD because it influences how well any strategy works in development of communication abilities for ASD children. If this is effectively done at early stages, children with autism spectrum disorder can be introduced to communication interventions early to enable them achieve significant communication abilities which can make them relate with other members in the communities.

The study recommends that communication enhancement strategies should be individualized because autistic children possess different challenges and therefore the strategies should be tailor made based on their unique behaviors and habits for outcomes that are more effective.

The study also recommends more investigation on communication interaction strategies that focus on social cues as this improves, not only the communication abilities but also creation of relationships. Social skills are essential in understanding and maintaining social relationships which are important in day to day life. More interventions in social skills should therefore be utilized with in order to extensively improve the children in a holistic manner.

The study recommends the incorporation of multiple stakeholder perspectives like the parents of ASD children, educationists and individuals with autism spectrum

disorder to help design and evaluate communication enhancement strategies so as to ensure alignment and consideration of the needs of autistic children.

The study also recommends that the society need to appreciate the existence of autism spectrum disorders. There is a need for the government and other stakeholders to undertake extensive civic education to members of the society. It was noted that some children did not received early intervention because their parents had hidden them from the public. More sensitization would bring out the issue of autism and enable children with autism be accepted by the peers who are non-autistic.

Recommendations for Further Research

The focus of this study was to interrogate the effects of communication enhancement strategies on the development of communication abilities among autistic children in Nairobi County. Findings revealed that visual objects, social interaction strategies and augmentative alternative communication strategies improved communication abilities of children with autism. There is a need to for comparative studies in other counties especially rural counties far away from Nairobi so as to get a country-wide perspective of the subject matter.

Equally, it would be worthwhile to undertake a similar study using questionnaires and perform more data analysis such as regression to get more inferences on the development of communication abilities among autistic children in Kenya and beyond.

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Appendix A: Interview Guide

COMMUNICATION ENHANCEMENT STRATEGIES FOR THE DEVELOPMENT OF COMMUNICATION ABILITIES AMONG AUTISTIC CHILDREN IN NAIROBI COUNTY

This interview guide aims at collecting data on communication enhancement strategies and development of communication abilities among autistic children in Nairobi County.

Guiding Questions

1. What is your view on use of still images and objects such as photographs, pictures etc in enhancing communication abilities among children with autism?
2. How would you rate the effectiveness of visual objects strategies as a communication enhancement strategy for autistic children?
3. How do you view the use of gestures, facial expressions etc in enhancing communication abilities among children with autism?
4. What specific augmentative and alternative tools have you noticed to be effective in enhancing communication abilities for autistic children and could you explain how they function?
5. How do you perceive use of social interactions such as games and sharing time in enhancing communication among children with autism?
6. What changes in communication abilities have you observed after introducing social interaction strategy for autistic children?
7. What are the key challenges faced when communicating with children with autism spectrum disorder?

-End-

Appendix B: List of Autistic Centers to be sampled

1. Annabel schools
2. Acorn special tutorial
3. Bidii primary
4. Buruburu Baptist school
5. Buruburu one primary school
6. City primary school
7. Embakasi village, Christ the king catholic church
8. Eslyne center school
9. Fairmile, waiyaki way
10. Fanaka junior integrated school
11. Feruzi charter school
12. First steps intervention
13. Jacaranda special school
14. Kaizora institute
15. Kenya community center for learning
16. Kestrel manor school
17. Kenya Institute of Special Education
18. Lily of valley amboseli drive
19. Lovington- Grangeville in Kileleshwa
20. Mirema school
21. Muthaiga city primary
22. Nairobi Early Intervention Center Lavington
23. Nileroad special school
24. Oshwal academy
25. Parkands primary
26. Pearl gardens school
27. Royal angels
28. The Hermitage garden school
29. Treeside school, Kasarani

Appendix C: Ethical Clearance

**VERDICT: APPROVED WITH COMMENTS**

Daystar University Institutional Scientific and Ethics Review Committee (DU-ISERC)

Our Ref: **DU-ISERC/09/08/2023/000929**Date: 9th August 2023

To: Mwachah Loise Nativly (20-0564)

Dear Mwachah,

COMMUNICATION ENHANCEMENT STRATEGIES FOR THE DEVELOPMENT OF COMMUNICATION ABILITIES AMONG AUTISTIC CHILDREN IN NAIROBI COUNTY

Reference is made to your ISERC application reference No. **280723-01** dated **28th July 2023** in which you requested for ethical approval of your proposal by Daystar University Ethics Review Board. We are pleased to inform you that ethical review has been done and the verdict is to **Revise to the satisfaction of the supervisors and then proceed to the next stage**. As guidance, ensure that the attached comments are addressed. Please be advised that it is an offence to proceed to collect data without addressing the concerns of Ethics Review board. Your application approval number is **DU-ISERC-000929**. The approval period for the research is **between 9th August 2023 to 8th August 2024** after which the ethical approval lapses. Should you wish to continue with the research after the lapse you will be required to apply for an extension from DU-ERB at half the review charges.

This approval is subject to compliance with the following requirements.

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review approval by Daystar University Ethics Review Board.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to Daystar University Ethics Review Board within 72 hours of notification.
- iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to Daystar University Ethics Review Board within 72 hours.
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of a signed one-page executive summary report and a closure report within 90 days upon completion of the study to Daystar University Ethics Review Board via email [duerb@daystar.ac.ke].

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://cris.nacosti.go.ke> and other clearances needed.

Yours sincerely

Dr. Susan Muriungi PhD
 Ag. Chair, Daystar University Institutional Scientific and Ethics Review Committee



Encl. Review Report

"...with the day dawn and the
DAYSTAR arise in your hearts"
 2 Peter 1:19 KJV

Appendix D: Research Permit



REPUBLIC OF KENYA



**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

RefNo: **690045**

Date of Issue: **12/September/2023**

RESEARCH LICENSE



This is to Certify that Ms. Loise Nativity Mwimah of Daystar University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: COMMUNICATION ENHANCEMENT STRATEGIES FOR THE DEVELOPMENT OF COMMUNICATION ABILITIES AMONG AUTISTIC CHILDREN IN NAIROBI COUNTY for the period ending : 12/September/2024.

License No: **NACOSTIP/23/29405**

690045

Applicant Identification Number



Director General
**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION**

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Appendix E: Plagiarism Report

Mwimah Loise Nativity Thesis

by Nativity Mwimah

Submission date: 17-Oct-2023 02:34PM (UTC+0300)

Submission ID: 2183184436

File name: Mwimah_Loise_Nativity_Thesis.docx (187.05K)

Word count: 23240

Character count: 133403

DAYSTAR UNIVERSITY

Mwimah Loise Nativity Thesis

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