# Imitation, Visual Support and Academic Achievement among Children with Autism Spectrum Disorder in Special Needs Schools in Rivers State, Nigeria

## Ajemba, Marvis; Dr. Chujor J. Chujor

Department of Educational Psychology, Guidance and Counselling,
Faculty of Education, University of Port Harcourt, Port Harcourt, Nigeria

## ABSTRACT

This study investigated the relationship between imitation, visual support and academic achievement among children with autism spectrum disorder in special needs schools. The study adopted a correlational survey design. Two research questions and two corresponding hypotheses were raised and formulated to guide the study. The population for this study consists of all 80 male and female pupils diagnosed with ASD in seven special needs schools in Rivers State. The research instrument that was used in this study is a modified four-point Likert type scale questionnaire titled "Imitation, Visual Support and Academic Achievement Questionnaire" (IVSAAQ). Cronbach Alpha statistics was used to estimate the reliability of the instrument and the reliability coefficients of 0.65 for imitation, 0.89 for visual support and 0.92 for academic achievement were obtained. Data was collected and analysed using simple regression, mean and standard deviation and independent t-test at 0.05 alpha level of significance. From the data analyzed, it was found that imitation and visual support are significantly related to academic achievement among children with ASD in special needs schools. Based on these findings the following recommendations were made: Teachers, caregivers, and parents of children with autism spectrum disorder (ASD) should encourage imitation by modelling desired behaviours or expected outcomes through demonstrating words or gestures about objects and activities the children are interested in and specifically requesting them to imitate; Teachers, caregivers, and parents of children with autism spectrum disorder (ASD) should promote the use of visual support by using visual cues such as picture cards or toys to improve vocabulary and comprehension. These supports can be gradually withdrawn to enable the children become more independent in routines and social interaction.

*KEYWORDS*: *Autism Spectrum Disorder, Imitation, Visual Support, Academic achievement*

# INTRODUCTION

Academic achievement refers to the observed and measured aspect of a student's mastery of skills and subject contents as measured with valid and reliable tests (Joe et al., 2014). Academic achievement is a measurable index that depicts a student's cognitive, affective and psychomotor domains in an educational setting. The academic achievement of students are ascertained by testing, which has and will continue to play significant role in any educational system worldwide. It would be irrational to think of teaching without test, measurement and evaluation. Evaluation of educational achievement is indispensable for effective formal and even non-formal education (Kpolovie et al., 2014).

Autism spectrum disorder (ASD) refers to neurodevelopmental conditions usually present from early childhood onward and encompasses challenges in specific areas such as social communication, social interaction, repetitive behaviour, and distinct interests throughout life (Baron-Cohen, 2017). The term spectrum in this context refers to a variety of symptoms among individuals which can be categorized as mild, moderate and extreme

(Trajkovski, 2020). Children with ASD are likely to differ in presentation depending on; chronological age, developmental level, pattern and severity of associated behaviours, overall intellectual potential and strengths/concerns, learning style (including attention skills, receptive and expressive language skills), physical health and well-being (e.g., absence/presence of seizures, allergies/autoimmune concerns, sleeping/ eating/toileting concerns, access to exercise, etc.). For most children, symptoms are identified early on in childhood, usually before the age of three years. Approximately 30% of toddlers with autism spectrum disorder (ASD) go through a brief period during the second year of life where they no longer use words they once had, or where they do not seem to be gaining new words and communicative skills (Ozonoff et al., 2008).

Communication lends to the social and cognitive development of human beings and as a powerful tool, it helps in building relationships, acquiring knowledge, and taking decisions. The ability to communicate and determine the mode of communication varies from person to person. The greater the ability, the greater the learning capacity and vice versa (Keyton, 2011). A communication deficit or disorder is reflected in an inability to receive and process or interpret and use concepts of linguistic symbol systems. Deficits in communication skills can prevent people from realizing their potentials (Lal and Sanghvi, 2015). Communication is an important factor when working with individuals diagnosed with autism spectrum disorder (ASD). About one-third to half of individuals with ASD do not develop enough natural speech to meet their daily communication needs. Although most individuals communicate using the combination of verbal and nonverbal language, other methods can be used to enhance or substitute for spoken language. Sign language which is the most common, objects, pictures, or written words can also be used in a variety of ways to deliver messages (Crissey, 2009). Communication skills are made up of three (3) different components namely; Social communication, verbal communication and non-verbal communication. However, the focus of this study is on non-verbal communication which comprises imitation, visual support alongside academic achievement among children with ASD.

Butterworth in Malik (2017) defined imitation as "when an individual voluntarily reproduces behaviour as observed in another who acts as the model for the form of a behaviour". Like most skills in infancy, imitation has a dyadic component, often seen during interactions with caregivers. Impairments in imitation

in children with autism have been observed as early as 12 months (Rogers et al., 2010; Wallace and Rogers, 2010; Young et al., 2011) and are associated with later social-communicative development (Rogers and Williams, 2006). Imitation does not develop in isolation as it primarily involves observation of a partner's actions and then reproducing those actions. Reciprocal interactions involving an interest in the partner and turn taking are key components of imitation (Ingersoll, 2008; Over and Carpenter, 2013). Child-caregiver interactions by the end of first year focus on imitative play with objects while imitative play in mother-child interactions forms a stable backdrop of interaction throughout early childhood. Studies involving peer interactions in toddlers also demonstrate that imitation forms a major part of the peer-interaction as well as basis for both verbal and non-verbal communication between partners (Malik, 2017). A good understanding of partner goals and intentions are the building blocks for theory of mind skills and it is in imitative play that children learn intentions and goals (Over and Carpenter, 2013). Therefore, the social nature of imitation seems to be closely linked with the development of later, more complex social-communication skills, and disruption in early social imitation may have a significant impact on later development of the child (Rogers and Williams, 2006).

Visuals are referred to by numerous names such as visual strategies, visual supports or visual tools, all of which refer to using something visual to help individuals understand communication better. The visually perceived stimuli can assist an individual in comprehending information and demands (Breitfelder, 2008). In the classroom setting, these supports could be for direction following, schedules, rules, and understanding instructions. Visual strategies help individuals who are visual learners in many ways such as communicating information to and from individuals, helping students organize their thinking, provide choices and communicate rules. By using visual supports, students who have communication delays can have eased transitions, feelings of empowerment by having visual choices, clearly defined expectations, longer attention span, reduced anxiety, having concrete concepts, and the ability to express his or her thoughts (Breitfelder, 2008). Visual strategies have also been successfully used to teach children with autism literacy skills, cooking, encourage positive behaviour, provide activity schedules using computers and video, signaling activity change and transitions and for signaling activity change and transitions (Kimball et al., 2004). Visual supports help bring structure,

routine, and sequence to their environment which is needed to function during daily activities (Rao and Gagie, 2006). It can be developed using simple, inexpensive, everyday materials and inexpensive games to enhance processing ability and teach social skills, play skills, academic skills, positive behaviours, and communication skills to individuals with autism (Rao and Gagie, 2006). Visual support for early learning has been effective for teaching young children with a range of special needs, particularly children with speech/language impairments, social-communication difficulties, and/or poor understanding (Bochner and Jones, 2003). Through the use of visual supports, early intervention professionals can enhance their teaching of specific skills across all developmental domains, manage behaviour, and promote independence (Wellington and Stackhouse, 2011). Research evidences reveal that children with and without disabilities benefit from visual supports. In fact, researches have identified a picture-superiority effect where pictures are better remembered than words regardless of age and intellectual functioning (Whitehouse et al., 2006). It is against this backdrop that the researchers sought to determine how imitation and visual support relate to academic achievement among children with autism spectrum disorder (ASD) in special needs schools.

## STATEMENT OF THE PROBLEM

Autism spectrum disorder (ASD) encompasses significant challenges in communication and social skills that can prevent successful participation in school and family activities. An observation of the impact of these challenges and a review of literature suggests that in Nigeria, many children with this puzzling condition are largely unknown and yet to be identified while the known population are usually isolated, rejected, stigmatized, and associated with evil, thereby leading to anxiety, victimization and abuse. Children with ASD are likely to suffer severe anxiety in the classroom setting and may find the sounds, smells, and proximity of other children completely overwhelming. This might lead to complete withdrawal from interaction, siting in the corner alone, behavioural outbursts or a display of repetitive behaviours such as rocking, clicking fingers, spinning or pacing around. Other children may find these behaviours confusing, and may feel fearful towards children on the spectrum which eventually results in isolation and rejection. With such unsettling consequences associated with ASD and its high prevalence, it is sad to note that inaccurate or misleading media representations of ASD, lack of understanding as well as fear all contribute significantly to the prejudice, social

marginalization and stigmatization of children on the spectrum, hence the need for accurate identification and diagnosis and creation of environments that support communication across a range of learning experiences in order to facilitate effective communication skills,. This has necessitated a comprehensive understanding of imitation, visual support and how they relate to the academic achievement of children on the spectrum as well as strategies that can address the ever-growing academic needs of school children on the spectrum.

## AIM / OBJECTIVES OF THE STUDY

The aim of this study was to investigate the relationship between imitation, visual support and academic achievement among children with ASD in special needs schools. In specific terms, the study achieved the following objectives:

1. Determined the extent to which imitation relates to academic achievement among children with ASD in special needs schools.
2. Ascertained the extent to which visual support relates to academic achievement among children with ASD in special needs schools.

## RESEARCH QUESTIONS

Two research questions were posed to guide the study. and two corresponding hypotheses were formulated to guide the study.

1. To what extent does imitation relate to academic achievement among children with ASD in special needs schools?
2. To what extent does visual support relate to academic achievement among children with ASD in special needs schools?

## HYPOTHESES

These two hypotheses were tested at 0.05 level of significance.

1. There is no significant relationship between imitation and academic achievement among children with ASD in special needs schools.
2. There is no significant relationship between visual support and academic achievement among children with ASD in special needs schools

## METHODOLOGY

This study adopted a correlational survey design to investigate the relationship between imitation, visual support and academic achievement among children with autism spectrum disorder in special needs schools. The population for this study consists of all 80 male and female pupils diagnosed with ASD in seven special needs schools in Rivers State. The study adopted the purposive sampling technique in selecting 80 participants from the population of the study area. To have a well-characterized sample of children with ASD, participants were deemed eligible for the

current study if they had received a diagnosis on the autism spectrum and met the criteria as stated in the Diagnostic and Statistical Manual of Mental Disorders (DSM–5), a manual for assessment and diagnosis of mental disorders. Also, only children who were between the ages of 5 and 12 years were included in the study. The research instrument used in this study was a four-point Likert type scale questionnaire titled "Imitation, Visual Support and Academic Achievement Questionnaire" (IVSAAQ). The instrument is divided into three sections. Section A contains demographic information while section B contains two themes namely imitation containing seven items and visual support containing seven items. The third section contains an adapted instrument of Blank, Rose and Berlin (1978) known as Blanks Levels of Language which was modified to fit the current research settings (Nigeria), this led to the reduction in the number of items, which were originally 40 items to 20 items implying that the researcher removed five items from each level of language as contained in the instrument. The instrument also contains a picture scene to guide pupil's response to the adapted instrument. The instruments were constructed using a four-point Likert scale of Always (A), Often (O), Sometimes (S), and Never (N) which was scored as 4, 3, 2 and 1. Cronbach Alpha statistic was used to estimate the reliability of the instrument and the following reliability coefficients of 0.65 for imitation, 0.89 for visual support and 0.92 for academic achievement were obtained. Data was collected and analysed using simple regression, mean and standard deviation and independent t-test at 0.05 alpha level of significance.

## RESULTS

The results of the data analysis were presented in the tables below. Data analysis was done in relation to the research questions and hypotheses.

**Research Question 1:** To what extent does imitation relate to academic achievement among children with ASD in special needs schools?

**Hypothesis One:** There is no significant relationship between imitation and academic achievement among children with ASD in special needs schools.

**Table 1: Simple regression analysis of imitation with academic achievement among children with autism spectrum disorder (ASD) in special needs schools.**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 23.045 | 6.635 | | 3.473 | .001 |
| | Imitation | 1.005 | .353 | .307 | 2.846 | .006 |

*P<.05 Level of Significance, N=80; Dependent Variable: Academic Achievement; Predictors: (Constant), Imitation*

The result in table 1, showed that the beta value for imitation is .307, which reveals that about 30.7% of imitation relate with academic achievement among children with autism spectrum disorder in special needs schools. Its significance can be seen from the associated t-value of 2.846 which is statistically significant at 0.05 alpha level. This implies that imitation have significant relationship with academic achievement among children with autism spectrum disorder in special needs schools, therefore the null hypothesis is rejected.

**Research Question 2:** To what extent does visual support relate to academic achievement among children with ASD in special needs schools?

**Hypothesis Two:** There is no significant relationship between visual support and academic achievement among children with ASD in special needs schools.

**Table 2: Simple regression analysis visual support with academic achievement among children with autism spectrum disorder**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 16.422 | 5.360 | | 3.064 | .003 |
| | Visual support | 1.422 | .291 | .484 | 4.881 | .000 |

*P<.05 Level of Significance, N=80; Dependent Variable: Academic Achievement; Predictors: (Constant), Visual support*

The result in table 2, showed that the beta value for visual support is .484, this reveals that there is about 48.4% relationship between visual support and academic achievement among children with autism spectrum disorder in

special needs schools. Its significance can be seen from the associated t-value 0f 4.881 which is statistically significant at 0.05 alpha level. This implies that visual support have significant relationship with academic achievement among children with autism spectrum disorder in special needs schools, therefore the null hypothesis is rejected.

## DISCUSSION OF FINDINGS

Findings from the data analysis obtained from respondents for answering research question one and testing hypothesis one, indicated that there is significant positive relationship between imitation and academic achievement among children with ASD in special needs schools. This means that imitation has influence in ensuring academic achievement among school children. The result of the present finding was able to clearly establish that when a desired behaviour is modeled for children on the spectrum to imitate, children begin to exhibit appropriate behaviours that can also improve their academic performance. This finding is in line with Malik (2017) who undertook a study on the effects of reciprocal imitation training on behaviour and brain activity in children with autism. The result revealed an increase in spontaneous, social imitation skills was evident in the Treatment group compared with the Wait-List Control group. Also in line with this finding is a study carried out by Over and Carpenter (2013) that stressed on imitation as being often intimately tied to children's need to belong to the group and their drive to affiliate with those around them. This perspective resolves an apparent paradox in the empirical literature, explaining why children sometimes copy selectively and sometimes copy faithfully (over imitation).

Result from the analysis of responses of respondents in regards to research question two and hypothesis two, shows that there is significant positive relationship between visual support and academic achievement among children with ASD in special needs schools. This means that the independent variable (visual support) has significant relationship with academic achievement. This study affirms that visual objects or toys stimulate children on the spectrum to communicate more effectively and perform better academically. This is in tandem with the findings of Meadan et al. (2011) whose study is aimed at investigating the influence of visual supports on the communication skills of children with ASD in Prague, Czech Republic. The result of the findings indicated that the usage of object visuals is more effective on the communication skills of children on the spectrum. Also, this finding is in tandem with that of Chatlen (2020) who carried out a study on the effects of using visual activity schedules for individuals with autism. The result of the findings suggests that using visual activity schedules for

individuals with ASD show high quality evidence of positive effects.

## RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made;

1. Teachers, caregivers, and parents should encourage imitation in children with autism spectrum disorder (ASD), by modelling desired behaviours or expected outcomes through demonstrating words or gestures about objects and activities the child is interested in and specifically requesting him or her to imitate.

2. Teachers, caregivers, and parents should promote the use of visual support for children with autism spectrum disorder (ASD), by using visual cues such as picture cards or toys to improve vocabulary and comprehension. These supports can be gradually withdrawn to enable the child become more independent in routines and social interaction.

## CONCLUSION

Imitation and visual support are major variables that encourage communication among children on the spectrum and promote academic success. Academic achievement which indicates the extent to which children acquire knowledge or develop skills necessary for academic success relates significantly to imitation and visual support. From the findings made, children on the spectrum develops skills necessary for academic success when visual cues are introduced to learning environments and when children are able to imitate desirable behaviours. Findings also revealed that age and gender had no significant relationship with academic achievement among children with ASD in special needs schools.

## REFERENCES

[1] Baron-Cohen, S. (2017). Editorial Perspective: Neurodiversity - a revolutionary concept for autism and psychiatry. *58*, 744-747. https://doi.org/10.1111/jcpp.12703

[2] Bochner, S., & Jones, J. (2003). Augmentative and alternative forms of communication as stepping stones to speech. *Child language development learning and learning to talk. 2nd edition, Part, 3*. Second Edition. United Kingdom: Whurr Publishers. 241p.

[3] Breitfelder, L. M. (2008). Quick and Easy Adaptations and Accommodations for Early

Childhood Students. *Teaching Exceptional Children Plus, 4*(5) 5.

[4] Chatlen, E. (2020). The effects of using visual activity schedules for individuals with autism: A Systematic Review. University of Georgia.

[5] Crissey, P. (2009). Teaching communication skills to children with autism. USA: Attainment Company.

[6] Ingersoll, B. (2008). The effect of context on imitation skills in children with autism. *Research in Autism Spectrum Disorders, 2*(2), 332-340.

[7] Joe, A. I., Kpolovie, P. J., Osonwa, K. E., & Iderima, C. E. (2014). Modes of admission and academic performance in Nigerian Universities. *Merit Research Journal of Education and Review, 2*(9), 203-230.

[8] Keyton, J. (2011). Communicating research. *Asking questions, finding answers, 3*. McGraw-Hill Boston Publishers.

[9] Kimball, J. W., Kinney, E. M., Taylor, B. A., & Stromer, R. (2004). Video enhanced activity schedules for children with autism: A promising package for teaching social skills. *Education and treatment of children*, 280-298.

[10] Kpolovie, P. J., Joe, A. I., & Okoto, T. (2014). Academic achievement prediction: Role of interest in learning and attitude towards school. *International Journal of Humanities Social Sciences and Education (IJHSSE), 1*(11), 73-100.

[11] Lal, R., & Sanghvi, D. (2015). Autism and Functional Language Development–An Experiment with AAC Intervention. In *Autism Spectrum Disorder-Recent Advances*. IntechOpen.

[12] Malik, S. (2017). *The effects of reciprocal imitation training on behaviour and brain activity in children with autism.* (Doctoral dissertation, University of Birmingham).

[13] Meadan, H., Ostrosky, M., Triplett, B., Michna, A., & Fettig, A. (2011). Using Visual Supports With Young Children With Autism Spectrum Disorder. *Teaching Exceptional Children., 43*. https://doi.org/10.1177/004005991104300603.

[14] Over, H., & Carpenter, M. (2013). The social side of imitation. *Child development perspectives, 7*(1), 6-11.

[15] Ozonoff, S., Heung, K., Byrd, R., Hansen, R., & Hertz-Picciotto, I. (2008). The onset of autism: patterns of symptom emergence in the first years of life. *Autism Research, 1*(6), 320-328.

[16] Rao, S. M., & Gagie, B. (2006). Learning through seeing and doing: Visual supports for children with autism. *Teaching Exceptional Children, 38*(6), 26-33.

[17] Rogers, S. J., & Williams, J. H. (2006). *Imitation and the social mind: Autism and typical development*. Guilford Press Publishers.

[18] Rogers, S. J., Young, G. S., Cook, I., Giolzetti, A., & Ozonoff, S. (2010). Imitating actions on objects in early-onset and regressive autism: Effects and implications of task characteristics on performance. *Development and psychopathology, 22*(1), 71-85.

[19] Trajkovski, V. (2020). Psychological aspects of autism spectrum disorder. *ReAttach Therapy International Foundation, Kerkplein, 2*(6367), 14-23.

[20] Wellington, W., & Stackhouse, J. (2011). Using visual support for language and learning in children with SLCN: A training programme for teachers and teaching assistants. *Child Language Teaching and Therapy, 27*(2), 183-201.

[21] Whitehouse, A. J., Maybery, M. T., & Durkin, K. (2006). The development of the picture-superiority effect. *British Journal of Developmental Psychology, 24*(4), 767-773.

[22] Young, G. S., Rogers, S. J., Hutman, T., Rozga, A., Sigman, M., & Ozonoff, S. (2011). Imitation from 12 to 24 months in autism and typical development: A longitudinal Rasch analysis. *Developmental psychology, 47*(6), 1565.