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DETERMINING THE INFLUENCE OF PLAY STRATEGY ON ACADEMIC SKILLS FOR PUPILS WITH AUTISM SPECTRUM DISORDERS IN SPECIAL SCHOOLS IN EMBU COUNTY, KENYA

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Abstract:
Autism Spectrum Disorder (ASD) is a neurodevelopmental impairment that affects speech and behaviour, often beginning in the preschool years and lasting across a person's life. However, there is little empirical data on the efficacy and practical application of these tactics in special schools in Kenya, and especially in Embu County. The purpose of this study was to determine the influence of play strategy on academic skills for pupils with ASD in selected primary schools in Embu County, Kenya. This study was guided by Albert Bandura's observational learning theory. The present research employed a descriptive survey design. This study targeted a total population of 267 participants comprising 205 learners, 20 head teachers, 234 teachers, 5 Curriculum Support Officers in Charge of Special Needs Education (CSO-SNE), and 100 parents from 20 public primary schools and special schools. The sample size comprised a total of 124 participants comprising 26 learners, 20 head teachers, 63 teachers, 5 CSOs-SNE, and 10 parents from 20 public primary schools and special schools. This study used questionnaires, observation checklists and interview schedules to collect data. A pilot study was done in one of the special schools in Embu County to enhance the validity and reliability of the research tools. Cronbach's alpha was calculated for the two test-retest scores. Quantitative data were descriptively analyzed using the Statistical Package for Social Sciences (SPSS). The analyzed quantitative data were presented using tables, figures, and charts. Thematic analysis was used to identify patterns and themes in qualitative replies based on the interview schedules. Findings revealed that behaviour-

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modelling strategies were widely available, with more than two-thirds of teachers reporting access to them in their schools, indicating substantial institutional recognition of their importance. Teachers expressed strong agreement that behaviour modelling improves self-efficacy, communication, teamwork, academic engagement, and reduces disruptive behaviours. The study concluded that behaviour modeling and play strategies are valuable, evidence-based approaches for enhancing academic skills among pupils with ASD in Embu County. Behaviour modeling fosters self-efficacy, communication, and academic engagement by providing learners with structured, observable examples to emulate. Play strategies, on the other hand, encourage engagement, creativity, problem-solving, fine-motor development, and pre-academic learning through interactive, hands-on experiences. The study recommended that peer buddy training programs should be instituted by the Ministry of Education and County Education Offices to help students with autism spectrum disorder (ASD) and their typically developing classmates learn strategies for positive reinforcement, effective communication, and the progressive development of independence.

Keywords: academic skills; autism; autism spectrum disorder; peer-buddy approach; play activities; special schools

1. Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental impairment that affects speech and behaviour, often beginning in the preschool years and lasting across a person's life (Tromans *et al.*, 2021). Around 31% of children with ASD have an intellectual disability, making it challenging for them to learn and engage with everyday situations (Vos *et al.*, 2020). Nonetheless, the causes of ASD remain unclear, and there are currently no documented medical therapies that are beneficial (Chen *et al.*, 2019). According to a developing view, unusual behaviours in children with ASD may be triggered by the brain's early adaptability to a challenging environment, rather than continuous neurological impairment (Kouklari *et al.*, 2023). Early detection and treatment can help teach youngsters who have autism the skills they need to succeed while also reducing the worry and stress that many families face when their kid has autism.

In the United States, Animashaun (2023) highlighted the favourable influence of behaviour modelling tactics in supporting academic growth among children with ASD in mainstream educational settings, which was facilitated through the use of Digital Social Stories (DSSs). However, there was a lack of professional development, school-wide support, district support, limited digital tools and resources, and an inability to use DSSs. In Australia, an increasing percentage of students with ASD attend inclusive schools (Devi & Ganguly, 2022). Teachers' self-efficacy views influence the implementation of inclusionary policies. Teachers who include students on the autism spectrum in primary and secondary schools must understand how to best serve their students' learning, social, and behavioural needs (Carrington *et al.*, 2021). In Italy,

Morsanuto *et al.*, (2023) developed an outdoor, modified integrated football project that improved motor activity in kids with ASD. Children with autism benefit from consistent and regular motor activity involvement, as evidenced by positive health outcomes such as decreased symptomatology and improved quality of life. In all, 108 statistical units between the ages of 8 and 11 were examined (18 statistical units were in the control group, and 90 individuals were in the sample). Although the project is aimed at girls (as per Article 5, which deals with gender equality), the majority of the participants chosen by the local health authority are men.

In South Africa, a new approach to education has been adopted to accommodate students with ASD in regular schools. The teachers' personality features and interactions with their friends, families, community, school and culture were socio-ecological resources that strengthened the teachers' resilience when assisting learners with signs of ASD (Mzizi, 2023). Social-ecological support predicted resilience, and the impact of individual characteristics on resilience was moderated by links with family and contextual factors. However, in Zimbabwe, primary school instructors lacked understanding about the causes, detection, and treatment of autism (Makaya, 2023).

The present literature in Kenya (Kenyan Ministry of Education, 2021) shows that there is a rising awareness of the importance of inclusive education, but it also acknowledges the shortcomings in adopting effective teaching practices for students with autism. Mutua (2022) researched classroom behaviour management tactics for students with ASDs in special schools in Embu County and discovered that the majority of teachers employed self-management techniques to reduce out-of-seat behaviour. Locally in Embu County, the existing landscape of special schools demonstrates a wide range of problems and triumphs in meeting the academic demands of students with ASD. While some schools have made progress in implementing evidence-based solutions, others may face challenges due to limited resources and a lack of specialised teacher training.

The Kenyan Ministry of Education's Special Needs Education Policy (2019) expresses a commitment to inclusive education, but translating policy into effective practices remains a significant difficulty. Identifying gaps in the current state of affairs is critical for directing the scope of this inquiry. Locally in Embu County, the existing landscape of special schools demonstrates a wide range of problems and triumphs in meeting the academic demands of students with ASD. While some schools have made progress in implementing evidence-based solutions, others may face challenges due to limited resources and a lack of specialised teacher training. The Kenyan Ministry of Education's Special Needs Education Policy (2019) expresses a commitment to inclusive education, but translating policy into effective practices remains a significant difficulty. Identifying gaps in the current state of affairs is critical for directing the scope of this inquiry.

Children with ASD frequently struggle with communication, social relationships, and repetitive behaviours. These issues have a big impact on their academic performance and learning experiences. According to studies, in the absence of focused interventions, young kids find it difficult to learn academic skills and risk being shut out of worthwhile

educational possibilities. Effective teaching techniques, like structured play, peer buddy systems, and behaviour modelling, have been demonstrated to enhance academic achievement and social integration in students with ASD worldwide. Nonetheless, it is yet unknown how much behaviour modelling, play techniques, and peer buddy systems help these students in Embu County with their academic performance. Furthermore, little study has examined the contextual difficulties teachers encounter while putting these strategies into practice. In order to close the information gap and offer educators and policymakers evidence-based suggestions, this study aimed to evaluate how well these useful teaching techniques improve the academic performance of students with ASD in Embu County's special schools.

1.3 Purpose of the Study

The purpose of this study was to determine the influence of play strategy on academic skills for pupils with ASD in selected primary schools in Embu County.

1.4 Conceptual Framework

Figure 1 visually depicts hypothesized relationships between the critical variables.

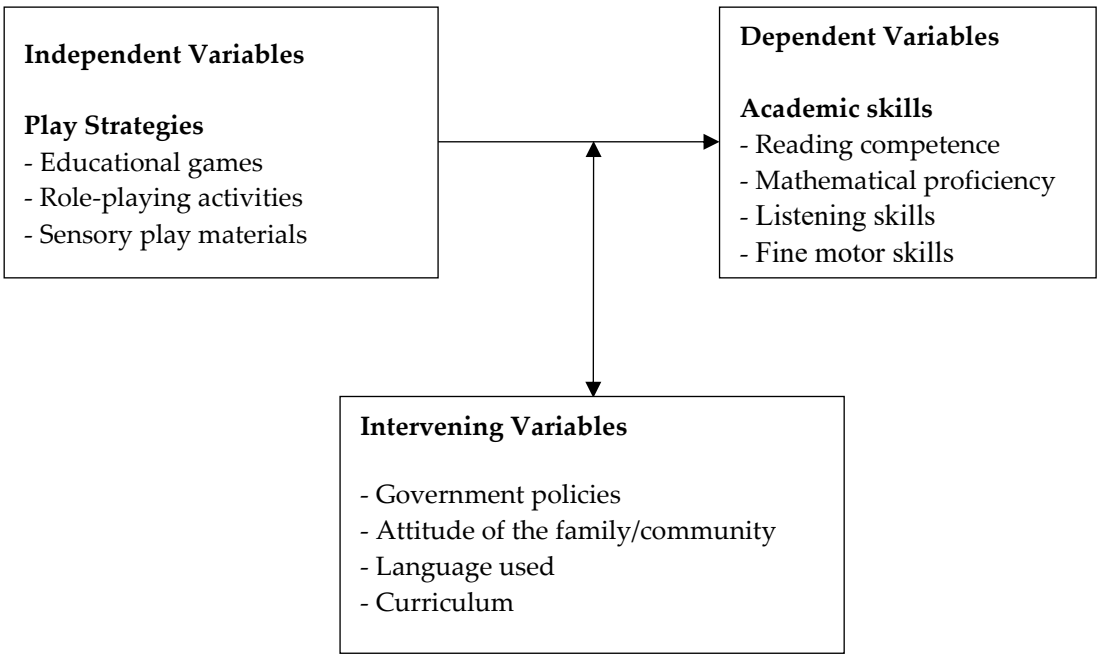

Figure 1: Conceptual Framework

2. Literature Review

2.1 Theoretical Framework

This study was guided by Albert Bandura's Observational Learning Theory, which explained how individuals learn behaviours through observation and imitation. This theory emphasized the processes of attention, retention, reproduction, and motivation, which are critical for effective learning (Bandura, 1986). The relevance of this theory to

the study lied in its application to the teaching strategies being investigated. Behaviour modelling, a core focus of the study, aligned with the theory as teachers acted as role models, demonstrating desired behaviours that learners with ASD could observe and replicate. Similarly, the use of peer-buddy strategies built on the principles of observational learning, where learners with ASD benefitted from observing and interacting with their peers to reinforce appropriate behaviour and enhance academic skills.

The theory also supported the play strategy by emphasizing the motivational and engaging aspects of learning, which encouraged retention and reproduction of academic skills in children with ASD. By grounding the study in Bandura's Observational Learning Theory, it provided a robust framework for examining how these strategies could be effectively used to address the unique learning needs of pupils with ASD in special schools in Embu County, Kenya. This theoretical foundation strengthened the study's capacity to contribute meaningful insights to special education and evidence-based teaching practices.

2.2 Play Strategies Enhancing Academic Skills for Children with ASD

In the United States study by Paparella and Freeman (2021) investigated the use of pivotal response training and video modelling to enhance youngsters with ASD's academic performance. These strategies fostered engagement and academic skills, leading to marked improvements in literacy and problem-solving skills. However, there is a gap in testing the long-term sustainability of these strategies across diverse cultural settings. This gap is crucial for tailoring such interventions to different educational contexts. Research by Cardinal (2021) emphasized the effectiveness of digital and traditional play strategies, such as interactive storytelling, in enhancing cognitive and literacy skills among children with ASD. Findings showed significant gains in memory and concentration. The gap identified was the limited focus on integrating these strategies in under-resourced schools, which often lack access to digital tools necessary for effective implementation.

In Egypt, Hassan *et al.* (2021) conducted a study on role-playing activities using culturally relevant stories, which improved verbal and attention skills in children with ASD. Despite its success, the study lacked a robust framework to measure long-term academic outcomes, leaving a gap in understanding the durability of these gains in formal education settings. A study by Nkosi and Van Rensburg (2022) focused on sensory-based play interventions to enhance self-regulation and numeracy skills. Nonetheless, the study underscored a gap in addressing the scalability of these interventions in under-resourced rural schools, which face challenges in acquiring sensory materials.

A Study by Mbogo and Awori (2023) highlighted community-driven play strategies, including parent-teacher collaboration. Positive effects included improved adaptability and comprehension of basic educational concepts. However, the gap identified was the absence of structured evaluation methods to quantify academic

progress, limiting the generalizability of findings to broader educational contexts. In a local study in Kenya, Otieno and Kariuki (2021) examined play-based therapy in special needs schools, which improved language acquisition and problem-solving skills. The study, however, identified a gap in consistent teacher training on play-based interventions, which impacted their effective application. In Embu County, Njuki and Wanjiru (2023) found that combining traditional games with structured play improved engagement and academic outcomes for children with ASD. However, the study highlighted the limited use of technology-enhanced play strategies due to resource constraints, presenting a significant gap in modernizing play-based learning.

3. Methods

3.1 Study Locale

This study was carried out in Embu County, Kenya, specifically in five public special schools that cater to pupils with ASD. The choice of Embu County is justified by the lack of empirical studies focusing on practical teaching strategies for enhancing academic skills among learners with ASD, as reported by the Curriculum Support Officers in Charge of Special Needs Education (CSOs-SNE). Additionally, the county has experienced a growing enrolment of pupils with ASD in special schools, yet there is limited documentation on how teachers implement behaviour modelling, play-based learning, and peer buddy systems to support these learners. The unique socio-cultural and educational context of Embu County, including variations in teacher preparedness, resource availability, and community perceptions of ASD, further underscores the need for localized research. Given the government's emphasis on inclusive education, understanding how practical teaching strategies are applied in this setting will provide valuable insights for improving interventions. Moreover, while global research on ASD education exists, its applicability in Kenya remains uncertain due to contextual differences, necessitating a study that generates region-specific recommendations. Therefore, Embu County presents a compelling case for this study, offering an opportunity to bridge existing knowledge gaps and inform evidence-based practices in ASD education.

3.2 Study Design

The descriptive survey design was highly suitable for this study as it allows for a comprehensive exploration of the status and impact of teaching strategies in special schools for pupils with ASD in Embu County, Kenya. This design makes it possible to gather both qualitative and quantitative data, providing a comprehensive picture of the several aspects being studied (Creswell, 2016). The survey design permitted the gathering of detailed information on behaviour modelling strategies, educational experiences, and the effectiveness of peer buddies, providing a well-rounded perspective on teaching strategies for learners with ASD. The design was efficient for collecting data from a huge

number of respondents, allowing for generalizability of findings to the broader population of special schools in Embu County.

3.3 Study Population, Sampling Techniques and Sample Size

According to information collected from the MoE offices by the CSOs-SNE in Embu County, there are 20 public primary schools and special schools that cater to students with ASDs. There are five (5) sub-counties in Embu County; however, only four (4) participated in the main research, with one Sub-County being utilized for the pilot. This study targeted a total population of 267 participants, comprising 205 learners, 20 head teachers, 234 teachers, 5 CSOs-SNE and 100 parents from 20 public primary schools and special schools. This research used purposive sampling, random sampling, stratified random sampling and convenience sampling. Purposeful Sampling was used to choose 20 head teachers. Selection was made based on their experience and leadership responsibilities in special schools. A total of 26 learners were chosen at random, including those diagnosed with ASD and their typically developing peers. Randomly picking students from each school to ensure representation. A total of 63 teachers were selected by stratified random sampling. To guarantee varied representation, teachers were stratified by grade level or subject taught. Convenience Sampling was used to pick 10 parents. The sample strategy was perfect for selecting parents who are accessible and willing to participate from the pool of parents with children attending the chosen schools. The sample size comprised 124 participants comprising 26 learners, 20 head teachers, 63 teachers, 5 CSOs-SNE, and 10 parents from 20 public primary schools and special schools. The sample size is displayed in Table 3.1.

Table 1: Sample Size

Category	Target	Sample	Percentage
Head teacher	20	20	100%
Pupils	205	26	10%
Parents	100	10	10%
Teachers	234	63	30%
CSOs-SNE	5	5	100%
Total	**564**	**124**	**10**

Source: Researcher 2025.

3.4 Research instruments

This study used questionnaires, observation checklists and interview schedules to collect data. Questionnaires were used to collect data from the sampled population that represents the larger population; this helped in time management, as many respondents were reached within a short time. The study employed interview schedules to collect in-depth qualitative data, complementing insights gathered through other research methods. A checklist was employed to document the sequential occurrences that depict how kids with ASD interact with others in their natural environments. These interactions were observed during play activities. The researcher conducted semi-structured

interviews with parents and CSOs-SNE. The tool included questions drawn from the specified objectives. Parents were given information on their children's developmental milestones and the types of behaviour they display. Furthermore, the CSOs-SNE were asked to furnish details regarding the early detection, assessment, intervention, and placement of children and youth with special needs and disabilities in a suitable educational or training program.

3.5 Piloting

Prior to finalizing the survey, research instruments were developed to carry out a pilot study aimed at assessing whether the items would generate the desired information. The selected educational institution for the trial program was one special school, located in Embu West Sub-County, Embu County. The Special school was chosen due to the presence of students with ASD who are receiving education in an inclusive environment. The pilot project included 18 participants, including 1 head teacher, 4 teachers, 2 parents, 1 CSO-SNE, and 10 learners. The educational institution served as the setting for assessing the validity and reliability of the research instrument prior to conducting the study. The collected data from the administered questionnaires, interview schedules, FGDs, and observation checklists were subjected to both quantitative and qualitative analysis. In situations necessitating modifications, such as in surveys where some questions may possess ambiguity, it becomes imperative to reword such questions. Unclear questions in the interview schedules and FGD agendas were revised. The allocated time for each tool was 30 minutes. Conducting pre-testing on the instruments contributed to the improvement of their validity and reliability.

3.6 Validity and Reliability of the Research Tools

This study established the content validity of the research instruments to ensure they effectively measured the intended constructs (Borg & Gall, 1983). To enhance validity, the instruments were reviewed by experts in special needs education, including experienced teachers and specialists in ASD. Their feedback was incorporated to refine the instruments before piloting. This process ensured that the research tools accurately capture the impact of practical teaching strategies on the academic skills of learners with ASD. Establishing the validity of the instruments contributed to the overall credibility and reliability of the study findings. The study employed the test-retest method to evaluate the instruments' dependability. As stated by Orodho (2004), the pre-test consisted of a sample size that accounted for 10 percent of the total population. The surveys were sent to a trial sample of respondents at St. Monica Primary School in Embu West Sub-County, located in Embu County. This activity was conducted twice, with a one-week break between each session. Following this, the researcher compared the two sets of data for each participant. The test-retest method was used to score the values of the test. To verify internal consistency for questionnaires and observation checklists, Cronbach's alpha was calculated for the two test-retest scores. An alpha value of 0.79 indicated that the research instruments were dependable.

3.7 Data Collection Procedures

To guarantee data collecting efficiency, structured questionnaires were administered to teachers, principals, and parents during scheduled school meetings or parent-teacher forums. Respondents were given a specific timeframe, preferably within the same visit, to complete the questionnaires to minimize delays. Direct classroom observations were conducted using an observation checklist to document teaching strategies, teacher-student interactions, and student engagement. Semi-structured interviews were conducted with CSOs-SNE and parents, using open-ended questions to allow for in-depth responses. Written notes were collected as a backup, and data were recorded utilizing audio equipment to improve accuracy. To facilitate parental participation, interviews were scheduled at convenient times, during either school meetings or home visits, with prior confirmation of availability. This approach ensured timely and comprehensive data collection while reducing the risk of unreturned or incomplete questionnaires. The entire data collection process is expected to be completed within four weeks.

3.8 Data Preparation and Analysis

Quantitative data acquired through questionnaires were edited and entered into a computer. SPSS was used to analyse data using descriptive statistics like frequencies and percentages. The checklist data was coded and quantified in terms of the frequency of observed behaviours and teaching tactics. Tables, figures, and charts were used to present the quantitative data. Thematic analysis was used to identify patterns and themes in qualitative replies based on the interview schedules. Triangulation of data from several sources (questionnaires, observations, and interviews) was used to validate and ensure the dependability of the findings.

4. Results

4.1 General Characteristics of the Sample

This section presents the demographic profiles of teachers and head teachers who participated in the study. Understanding these attributes is critical, as factors such as gender, age, professional training, and years of experience can influence how practical teaching strategies are selected, adapted, and applied to support the academic skills of learners with Autism Spectrum Disorders (ASDs). Table 2 presents the demographic distribution of the teachers.

In Table 2, the majority of teachers, 35 (59.3%), were female, which is consistent with the gender trends in early childhood and special education teaching in Kenya (MoE, 2019). Given that research indicates female teachers often demonstrate higher levels of nurturing behaviour, patience, and communication in special needs settings, this gender composition could positively influence the adoption of practical teaching strategies such as play-based learning and peer buddy systems. Age distribution shows that most teachers fall within the 30–49 years bracket (64.4%), suggesting a mature and experienced

teaching workforce. This composition is particularly advantageous for implementing behaviour modeling strategies, which require professional judgment and classroom management expertise.

Table 2: Demographic Information of Teachers

Variable	Category	Frequency	Percentage (%)
Gender	Male	24	40.7
	Female	35	59.3
Age	20–29 years	9	15.3
	30–39 years	18	30.5
	40–49 years	20	33.9
	50 years and above	12	20.3
Experience	1–5 years	10	16.9
	6–10 years	15	25.4
	11–15 years	20	33.9
	Over 15 years	14	23.7
Education Level	Certificate (P1)	18	30.5
	Diploma in SNE	25	42.4
	Bachelor's Degree	14	23.7
	Postgraduate	2	3.4

In terms of teaching experience, over half of the teachers, 34 (57.6%), had more than 10 years of experience. This indicates that the majority have had substantial exposure to diverse classroom situations, including learners with ASDs, increasing the likelihood of strategy adaptation based on lived teaching practice. Encouragingly, 25 (42.4%) of the teachers held a Diploma in Special Needs Education (SNE), and a further 27.1% held bachelor's or postgraduate degrees. This shows a solid professional foundation for addressing the learning needs of autistic pupils. Teachers with formal SNE qualifications were better placed to integrate structured interventions such as reinforcement systems, social skills training, and scaffolded play activities. Further findings showed that 18 (30.5%) of teachers only possessed a P1 certificate without specialized SNE training. This gap could limit the effective application of autism-specific teaching strategies, particularly for learners with more complex needs. Furthermore, the small proportion of two (3.4%) of teachers with postgraduate training highlights a need for advanced professional development opportunities, which could enhance capacity for evidence-based strategy implementation.

Table 3 indicates a male majority of 12 (60.0%), reflecting the leadership trends observed in Kenyan public schools. Most head teachers, 15 (75.0%), are aged 41 years and older, suggesting a leadership cohort with considerable career experience. In terms of academic qualifications, 13 (65.0%) of head teachers possess a bachelor's degree, while 6 (30.0%) hold a master's degree, reflecting a relatively well-qualified leadership body. Regarding leadership experience, 16 (80.0%) of head teachers have held the principal position for five years or more, indicating stability in school management. The low proportion (5.0%) of head teachers possessing only a diploma indicates that, although

leadership qualifications are generally robust, there remains an opportunity to incorporate special needs leadership training into professional development initiatives.

Table 3: Demographic Information of Head Teachers

Variable	Category	Frequency	Percentage (%)
Gender	Male	12	60.0
	Female	8	40.0
Total		**20**	**100.0**
Age	31–40 years	5	25.0
	41–50 years	9	45.0
	Over 50 years	6	30.0
Total		**20**	**100.0**
Highest Education	Bachelor's Degree	13	65.0
	Master's Degree	6	30.0
	Diploma in Education	1	5.0
Total		**20**	**100.0**
Years as Principal	Less than 5 years	4	20.0
	5–10 years	8	40.0
	Over 10 years	8	40.0
Total		**20**	**100.0**

4.2 Influence of play strategy on academic skills for pupils with ASD in selected elementary schools in Embu County, Kenya

The findings are presented and discussed in four sub-sections: (1) availability and type of play materials, (2) teachers' perceptions of the influence of play strategies, (3) observation checklist results on pupils' behaviour, and (4) qualitative insights from parents and CSOs-SNE. Interpretation begins with positive outcomes before addressing challenges, while drawing comparisons with relevant literature. Table 4 presents the types of play materials available in classrooms as reported by teachers and head teachers.

Table 4: Types of Play Materials in Classrooms

Material reported by teachers	Frequency	Percentage (%)
Building Blocks	40	67.8
Paints and Brushes	28	47.5
Toys	37	62.7
Crayons/Drawing Materials	33	55.9
Indoor Space for Activities	41	69.5
Play Material as reported by Head teachers	**Frequency**	**Percentage (%)**
Building Blocks	15	75.0
Crayons/Drawing Materials	12	60.0
Toys	14	70.0
Indoor Activity Space	16	80.0

The data presented in Table 4 indicate that a significant majority of schools possessed basic play materials, including building blocks, toys, and crayons, along with designated indoor areas for play activities. Building blocks and toys were frequently identified as

essential materials by both teachers and head teachers, indicating an institutional recognition of the significance of play resources for children with ASD. Most schools possess moderate resources to support play-based learning, as the availability of these materials facilitates the incorporation of structured play into classroom activities.

The findings are consistent with those of Otieno and Kariuki (2021), who demonstrated that access to basic, low-cost play materials in Kenyan special needs schools significantly enhanced language acquisition and problem-solving skills in pupils with ASD. Njuki and Wanjiru (2023) observed that learners can effectively engage with traditional games and basic materials, even in environments with limited technological resources. The proportion of teachers reporting a lack of specific materials, such as paints and brushes, highlights disparities in resource provision. This reflects the gap identified by Mbogo and Awori (2023), who observed that, although community-driven play initiatives can be effective, the lack of consistent access to diverse play materials constrains the potential academic benefits.

4.2.1 Play Strategy on Academic Skills Development for Learners with ASD

The study focused on teachers' self-reported on how the play strategy influences academic skills among pupils with ASD, measured using a 5-point Likert scale. The responses were categorized into five options: strongly agree (5), agree (4), not sure (3), disagree (2), and strongly disagree (1). Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to interpret the data. . Table 5 shows teachers' agreement with statements on the role of play and visual supports in enhancing academic skills.

Table 5: Teachers' Agreement with Play/Visual-Support Statements

Statement	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)	Mean	SD
Play/visual supports encourage learner engagement	0 (0.0)	0 (0.0)	3 (5.1)	20(33.9)	36 (61.0)	4.61	0.57
Independent manipulation of materials encourages creativity	0 (0.0)	3 (5.1)	2 (3.4)	26(44.1)	28 (47.5)	4.42	0.73
Play enhances problem-solving and turn-taking	1 (1.7)	1 (1.7)	4 (6.8)	26(44.1)	27 (45.8)	4.39	0.73
Play supports fine-motor and pre-academic skills	0 (0.0)	1 (1.7)	4 (6.8)	23(39.0)	31 (52.5)	4.49	0.68

Key: SA=Strongly agree, A=Agree, NS=Not Sure, D=Disagree, SD=Strongly Disagree.

In Table 5, the consistently high mean scores and low standard deviations indicate a strong consensus among teachers that play strategies significantly enhance learner engagement, creativity, problem-solving, turn-taking, and fine-motor skills. Teachers

particularly emphasized the role of visual supports and hands-on materials in sustaining learners' attention and promoting academic participation. These findings corroborate Paparella and Freeman (2021), who found that play strategies integrated with pivotal response training fostered engagement, academic skills, and problem-solving abilities in children with ASD. The emphasis on creativity aligns with Cardinal (2021), who demonstrated that independent manipulation of play materials, such as through interactive storytelling or hands-on activities, boosts memory, concentration, and creative thinking in ASD learners. Moreover, the high agreement on the development of fine-motor and pre-academic skills is consistent with Nkosi and Van Rensburg (2022), who found that sensory-based play activities improved not only motor coordination but also numeracy and readiness for formal learning. However, the small proportion of teachers expressing neutrality or disagreement suggests that some educators may lack confidence in implementing these strategies effectively, a concern raised by Otieno and Kariuki (2021), who noted that inconsistent teacher training in play-based interventions reduces their impact.

4.2.2 Observation Checklist Results – Play Strategy

Table 6 summarizes observed behaviour of pupils in relation to play-based learning.

Table 6: Play Strategy Indicators (n=25)

Behaviour Observed	**Yes f(%)**	**No f(%)**
Starts games with peers who are usually developing	11 (44.0%)	14 (56.0%)
Strikes up conversations during play	10 (40.0%)	15 (60.0%)
Maintains play interaction for extended periods	9 (36.0%)	16 (64.0%)
Imitates classmates in role play	12 (48.0%)	13 (52.0%)

The findings presented in Table 6 demonstrate that although imitation during play was frequently observed, the majority of pupils encountered difficulties in initiating play with neurotypical peers, sustaining interactions, and maintaining conversations during play. Limited sustained engagement indicates potential difficulties in attention span, social stamina, and adaptability to group dynamics. The findings partially contradict those of Hassan *et al.* (2021), who conducted a study in Egypt demonstrating that culturally relevant role-play activities enhanced both verbal skills and attention span. The observed difference can be attributed to the structured and culturally contextualized nature of Hassan *et al.*'s intervention, in contrast to the less systematically facilitated play interactions in the current study. The low rates of sustained interaction underscore a gap identified by Mbogo and Awori (2023): without structured evaluation and reinforcement, the academic and social benefits of play may be ephemeral or inconsistent. This highlights the importance of integrating well-designed frameworks into play-based learning to maximize its potential benefits. Future research should explore how such interventions can be tailored to diverse cultural contexts to ensure that all children can experience meaningful developmental outcomes.

4.2.3 Qualitative Data Analysis

The semi-structured interviews with parents (n = 10) and CSOs-SNE (n = 5) were analyzed thematically. Codes were grouped under themes corresponding to the study objectives. Direct quotations from participants are included to illustrate key findings, with pseudonyms and descriptive identifiers to maintain anonymity. The following themes emerged from the qualitative data analysis

Theme 1: Play as a Motivator for Learning

Parents consistently reported that structured play, especially when related to lesson content, kept children motivated and willing to participate in academic tasks.

> *"If you turn the counting into a game with blocks, she will count all of them without losing focus."* (Female parent for a child in School F)

Parents observed that integrating lesson content into play increased motivation and focus. This supports Njuki and Wanjiru (2023), who found that blending traditional games with academic concepts enhanced learner engagement in Embu County.

Theme 2: Social Play Improves Communication Skills

Both parents and CSOs-SNE emphasized that group play activities promoted verbal interaction, turn-taking, and negotiation skills.

> *"During group play, he will actually ask for a toy — outside of playtime, he rarely speaks to anyone."* (Male parent for a child in School A)

Another participant supported the above sentiment by saying:

> *"We see their vocabulary improve when play activities are integrated daily — especially when peers are involved." (*38-year-old CSOs-SNE officer)

The above finding implies that group play encouraged verbal interaction, negotiation, and turn-taking, especially when peers were involved. This echoes Hassan *et al.* (2021), who reported that role-play improved verbal abilities among ASD learners.

Theme 3: Play as a Tool for Language and Social Growth

Through the FGDs, Parents highlighted that their children often learned new words, concepts, and problem-solving approaches during play with peers.

> *"When they play building blocks together, he learns colours and numbers without me having to teach him directly."* (Female parent, child in School F)

From the above sentiments, parents noted that their children learned new vocabulary and concepts through collaborative play, a finding consistent with Paparella and Freeman (2021), who linked play-based interventions to literacy and communication gains.

Theme 4: Short Engagement Periods Limit Learning

Several parents noted that their children quickly disengaged from play, which reduced the potential for skill transfer.

> *"He starts playing but leaves after a short while, so it's hard for him to learn teamwork or complete a task."* (Male parent, child in School H)

The above sentiment implies that several parents expressed concern that their children's limited attention span during play hindered teamwork and task completion. This limitation reflects gaps noted by Otieno and Kariuki (2021), which highlighted the need for consistent facilitation to maintain engagement.

Theme 5: Structured Play Promotes Academic Skills

Games with clear rules and teacher facilitation helped reinforce counting, turn-taking, and following instructions.

> *"When the teacher leads a counting game, he participates more and even tries to win."* (Female parent, child in School C)

The above finding implies that games with clear rules and teacher involvement enhanced participation and reinforced counting, problem-solving, and cooperation. This supports Cardinal (2021) and Nkosi & Van Rensburg (2022), who found that structured play interventions strengthen both cognitive and academic readiness skills.

5. Conclusion

This study concludes that behaviour modeling and play strategies are valuable, evidence-based approaches for enhancing academic skills among pupils with ASD in Embu County. Behaviour modeling fosters self-efficacy, communication, and academic engagement by providing learners with structured, observable examples to emulate. Play strategies, on the other hand, encourage engagement, creativity, problem-solving, fine-motor development, and pre-academic learning through interactive, hands-on experiences. However, the full potential of these strategies was hindered by inconsistent availability of materials, limited teacher training in specialized application, low levels of sustained peer interaction among pupils with ASD, and weak reinforcement of strategies in home environments. Addressing these challenges required a coordinated approach

that ensures adequate resources, professional development for teachers, structured facilitation in classrooms, and strengthened collaboration between schools and families.

5.4 Recommendations of the Study

1) Peer buddy training programs should be instituted by the Ministry of Education and County Education Offices to help students with autism spectrum disorder (ASD) and their typically developing classmates learn strategies for positive reinforcement, effective communication, and the progressive development of independence. Results from peer mediation will be more reliable and long-lasting as a result of this.
2) School administrators should allocate resources to ensure consistent access to diverse play materials and behaviour modeling tools across all classrooms and establish structured peer-modeling programmes, pairing pupils with ASD with trained neurotypical peers for regular sessions.
3) Teachers should integrate behaviour modeling and play strategies into daily lesson plans, ensuring the systematic reinforcement of target skills.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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