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The Effectiveness of Play-Based Integrated Educational Units in Developing Social Interaction among Children with Autism Spectrum Disorder Aged 6–10 Years in the School Environment."

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Abstract:
This study aimed to investigate the effectiveness of an educational program based on the use of integrated play in developing social interaction among children with Autism Spectrum Disorder (ASD) aged 6–10 years. To achieve the objectives of the study, a quasi-experimental one-group design was adopted. The study instruments consisted of the proposed educational program and a social interaction test. The study sample comprised eight children, who were randomly selected.
The results showed that the overall effectiveness of the proposed educational program was high. The findings also revealed statistically significant differences between the scores of the experimental group on the pre- and post-administrations of the social interaction test, in favor of the post-test, indicating the effectiveness of the program in developing social interaction among the participating children.
In light of these findings, the study recommended the importance of employing structured and guided play as an engaging and interactive educational approach that supports the holistic development of children with ASD, enhances their social skills, and promotes their successful integration and positive interaction within the school environment.

Keywords: Autism Spectrum Disorder (ASD); Educational Program; Integrated Play; Structured Play; Social Interaction; School Environment; Children Aged 6–10 Years.

1- Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that substantially affects several core domains of child development, particularly communication, social interaction, and play skills. (Elbeltagi, Jones, & Freeth, 2023) Childhood represents a critical developmental period for the acquisition of social skills and the development of play-related abilities. However, children with autism spectrum disorder (ASD) may experience difficulties in social communication and interaction, accompanied by limitations in play skills, which may impede their ability to establish and maintain relationships with peers and increase their vulnerability to social isolation. (Azeem, Dogar, Saeed, & Shahzad, 2022) The impact of these challenges extends beyond the social domain to encompass psychological and emotional well-being, potentially undermining children's self-confidence and hindering the development of their social competencies. Moreover, limited social integration may restrict equitable access to educational and employment opportunities, as well as meaningful participation in community life. Consequently, these barriers may adversely affect their quality of life while imposing substantial psychological and financial burdens on their families, in addition to perpetuating broader patterns of stigma and social exclusion (Elbeltagi, Jones, & Freeth, 2023).

Play-based interventions are recognized as therapeutic approaches that employ play as a primary medium for promoting children's social, emotional, and developmental functioning. These interventions vary in their underlying theoretical frameworks and modes of implementation, ranging from child-centered and nondirective play therapy to more structured developmental and behavioral approaches. Such interventions have received particular attention in the context of autism spectrum disorder (ASD), given their potential to foster social interaction, enhance communication skills, and support emotional regulation. (Anggraini, 2018).

Previous studies have indicated that play-based interventions may contribute to the development of children's social skills by providing opportunities for interaction, participation, and communication with others within structured and interactive play contexts. Evidence has also suggested that group-based play can enhance a range of social competencies, including interpersonal interaction, social awareness, and the ability to adapt to social situations. (Anggraini, 2018) Despite the growing interest in play-based interventions, previous studies have varied considerably in terms of the nature, objectives, and implementation of the interventions employed. Moreover, some studies have focused primarily on specific aspects of social or communicative development, which may limit the generalizability of their findings across diverse educational contexts. (Jensen, Biesen, & Graham, 2017)

Despite the growing recognition of play-based interventions as a promising approach for enhancing social development among children with autism spectrum disorder, limited research has examined the effectiveness of structured and integrated play-based educational units implemented within the school environment. Moreover, relatively little attention has been given to their role in developing social interaction skills among children with ASD aged 6–10 years. Therefore, the present study seeks to address the following research problem: **To what extent are play-based integrated educational units effective**

in developing social interaction skills among children with autism spectrum disorder aged 6–10 years in the school environment?

1-2 . Study Objectives

- To investigate the effectiveness of play-based integrated educational units in developing social interaction skills among children with autism spectrum disorder aged 6–10 years in the school environment.

1-3 Significance of the Study: The significance of the present study can be summarized as follows:

- The study contributes to the development of evidence-based, play-based educational practices aimed at enhancing social interaction skills among children with autism spectrum disorder (ASD).
- The study raises awareness among educators, special education professionals, and practitioners regarding the importance of systematically promoting social interaction skills in children with ASD.
- The findings may provide a basis for the broader implementation and adaptation of the proposed program, thereby supporting professionals and educational institutions involved in the education and care of children with ASD.

1-4 Study Concepts and Definitions :

- **Children of the Spectrum of Autism:**

  The concept of Autism Spectrum Disorder (ASD) has evolved considerably over the past decades and has received increasing attention from researchers and specialists. The American psychiatrist Leo Kanner was among the first to use the term Early Infantile Autism in 1943 to describe the characteristics of the disorder (Adel, 2002).

  Autism Spectrum Disorder is a neurodevelopmental disorder that primarily affects communication, social interaction, and behavior. It may also involve language difficulties and restricted or repetitive patterns of behavior and interests, which can affect children's ability to interact with others and adapt to their surrounding environment

  Operationally, children with autism spectrum disorder in the present study are defined as children aged 6–10 years who meet the established inclusion criteria for the study sample. Their eligibility is determined based on the scores obtained on the assessment instrument used in the present study.

- **Social communication and interaction**

  Social communication and interaction refer to the use and understanding of verbal and non-verbal communication, such as conversation and body language, as well as skills involving sharing and turn taking, which contribute to establishing and maintaining relationships and friendships. Difficulties in social communication and interaction are considered core characteristics associated with autism spectrum disorder (ASD), although their nature and severity may vary considerably among children

  Operationally, social interaction in the present study refers to the child's observable ability to engage in eye contact, wait for their turn, participate in group activities, and cooperate with others, as measured by the social interaction assessment tool used in the study.

- **Integrated Play**

The integrated play is operationally defined in the present study as a set of structured and systematically planned group play activities involving children with Autism Spectrum Disorder and their typically developing peers. These activities are designed to provide repeated opportunities for participation, communication, cooperation, turn taking, and interaction with others, in accordance with the activities and procedures specified in the integrated play-based program implemented in the present study.

2- Methodology

2-1 Study Method :

The present study employed a quasi-experimental design with a single group, as it was appropriate to the nature of the study**.**

2-2 Population and Sample of the Study :

Children with Autism Spectrum Disorder (ASD) who met the eligibility criteria for participation in the study program were selected based on the following criteria:

1- The child's chronological age ranged from 6 to 10 years, as the characteristics of Autism Spectrum Disorder are clearly manifested during this developmental stage, and children at this age exhibit difficulties in social interaction skills.

2- The study sample comprised children diagnosed with Autism Spectrum Disorder (ASD) who exhibited mild to moderate levels of severity.

3- The children with Autism Spectrum Disorder had no intellectual disability or multiple disabilities, and ASD was the primary condition under investigation. They also had no hearing or visual impairments, in order to minimize the influence of other variables that might affect their social interaction with others.

The final study sample consisted of eight children with Autism Spectrum Disorder (ASD) who exhibited deficits in social interaction skills. The study program was administered to all participants. The characteristics of the study sample are presented in Table 1.

Table 1.
Demographic and Clinical Characteristics of the Study Sample (N = 8)

Participant	Age (years)	Sex	Stanford–Binet IQ Score (SB5)	GARS-3 Autism Index Score	Autism Severity Level
01	06	Male	68	80	Moderate
02	08	Male	65	75	Moderate
03	09	Female	75	66	Mild
04	08	Male	80	85	Moderate
05	10	Female	78	65	Mild
06	08	Female	70	80	Moderate
07	07	Male	80	85	Moderate
08	09	Male	75	64	Mild

2-3 Research Instruments:

The study employed a set of instruments for different purposes, including the selection of study participants and the assessment of the effectiveness of the intervention program, as follows:

a) Stanford–Binet Intelligence Scales, Fifth Edition (SB5)

The Gilliam Autism Rating Scale, Third Edition (GARS-3), was used to assess the severity of Autism Spectrum Disorder (ASD) among the children and to ensure that they met the eligibility criteria for inclusion in the study sample. This instrument was used solely for the purpose of participant selection and was not used to assess the effectiveness of the intervention program.

b) Gilliam Autism Rating Scale, Third Edition (GARS-3)

The Stanford–Binet Intelligence Scales, Fifth Edition (SB5), were used to assess the children's cognitive abilities and to verify that they met the criterion of having no intellectual disability, in accordance with the study's eligibility criteria. This instrument was not used to evaluate the effectiveness of the intervention program.

c) Social Interaction Skills Scale (Researcher-Developed)

The Social Interaction Skills Scale was used as the primary instrument for assessing the effectiveness of the intervention program. The scale was developed by the researcher to assess the level of social interaction skills among children with Autism Spectrum Disorder (ASD). It comprises three main dimensions: eye contact, turn taking, and group cooperation.

The scale was administered before and after the implementation of the intervention program to identify differences in the children's social interaction skills between the pre-test and post-test measurements and, consequently, to determine the effectiveness of the play-based integrated educational units in developing these skills.

The psychometric properties of the scale were also examined through appropriate procedures to establish its validity and reliability, thereby ensuring its suitability for administration to the study participants.

2-4 Construction of the Social Interaction Skills Scale

1) Preliminary Version of the Social Interaction Skills Scale

The researcher conducted a content analysis of specialized scientific literature, previous studies, and relevant assessment scales addressing social interaction and social skills among children with Autism Spectrum Disorder (ASD). This analysis aimed to identify the main dimensions of the scale and formulate its items in accordance with the characteristics of the target population, their developmental characteristics, the objectives of the study, and the nature of the play-based educational program.

The researcher reviewed previous studies addressing the assessment of social skills, social interaction, and communication among children, including the study by Cheung et al (2017), which examined the psychometric properties of the Chinese version of the Social Skills Improvement System–Rating Scales (SSIS-RS-C). The study provided relevant indicators of social skills, particularly those related to cooperation, communication, and social interaction with others.

The researcher also drew on the study by Thiemann and Goldstein (2001), which examined social communication among children with ASD by investigating communication and social interaction behaviors during interactions with peers. This study provided relevant behavioral indicators related to social communication and reciprocal social interaction.

Based on the analysis of these sources, the researcher identified three main dimensions of the Social Interaction Skills Scale: eye contact, turn taking, and group cooperation. A set of preliminary items was then formulated for each dimension to represent observable and measurable social behaviors relevant to the interactive situations addressed by the intervention program.

Accordingly, the preliminary version of the scale was developed and prepared for review by a panel of specialists to assess the relevance and appropriateness of the items to their respective dimensions, the clarity of their wording, and their suitability for the target population.

2) Content Validity of the Social Interaction Skills Scale.

Table 2.

Correlations between the Scale Dimensions and the Total Score

Scale Dimension	Pearson's Correlation Coefficient (r)	Sig	Statistical Significance
Eye Contact During Play	**0.590	0.01	Significant
Turn-Taking	**0.699	0.00	Significant
Group Participation and Cooperation	**0.589	0.00	Significant

**** Significant at the 0.01 level.**

3) Reliability of the Social Interaction Skills Scale

Table 3.

Reliability of the Social Interaction Skills Scale

Scale Dimension	Cronbach's Alpha (α)	Reliability
Eye Contact During Play	0.787	Reliable
Turn-Taking	0.823	Reliable
Group Participation and Cooperation	0.915	Reliable
Total Scale	0.910	Reliable

4) Final Version of the Social Interaction Skills Scale

Following the establishment of the validity and reliability of the scale, the researcher developed the final version of the Social Interaction Skills Scale, which consisted of 30 items distributed across the three dimensions of the scale: Eye Contact During Play, Turn-Taking, and Group Participation and Cooperation. Clear instructions for the

administration and scoring of the scale were also developed to ensure standardized procedures for administration and response.

Each item was rated using a three-point rating scale as follows: (3) observed, (2) sometimes observed, and (1) not observed. Higher scores indicate higher levels of social interaction skills.

For negatively worded (reverse-scored) items, the scoring was reversed as follows: (1) observed, (2) sometimes observed, and (3) not observed. The scoring procedure was designed to ensure that the total score consistently reflects the child's 3-level of social interaction skills, with higher scores indicating better social interaction skills.

3- Results

Table 4.

Wilcoxon Test Results and Significance of Differences between the Mean Scores of the Pre- and Post-Measurements on the Social Interaction Skills Scale among Children with Autism Spectrum Disorder.

Scale Dimension	Measurement	Mean	SD	Z	Sig	Direction of Significance
Eye Contact During Play	Pre-Test	14.00	2.45	-2.52	0.011	Significant in favor of Post-Test
	Post-Test	25.63	2.62			
Turn-Taking	Pre-Test	13.63	2.45	-2.54	0.012	Significant in favor of Post-Test
	Post-Test	23.50	2.07			
Group Participation and Cooperation	Pre-Test	14.88	1.81	-2.53	0.011	Significant in favor of Post-Test
	Post-Test	25.63	1.85			
Total Scale	Pre-Test	41.75	4.06	-2.56	0.010	Significant in favor of Post-Test
	Post-Test	73.00	6.63			

Table 4 demonstrates statistically significant differences between the pre-test and post-test measurements across all dimensions of the Social Interaction Skills Scale, as well as the total scale score, with all differences favoring the post-test measurement. For the Eye Contact during Play dimension, the Z-value was -2.52, with a significance level of 0.011, indicating a statistically significant difference at the 0.05 level in favor of the post-test. Similarly, statistically significant differences were observed in the Turn-Taking dimension ($Z = -2.54$, $p = 0.012$) and the Group Participation and Cooperation dimension ($Z = -2.53$, $p = 0.011$), with both differences favoring the post-test measurement. For the total score of the Social Interaction Skills Scale, a statistically significant difference was also observed ($Z = -2.56$, $p = 0.010$), favoring the post-test measurement. Overall, these findings indicate an improvement in the children's social interaction skills following the implementation of the intervention program.

4- Discussion

The results of the study indicate the presence of statistically significant differences between the pre- and post-measurements in the total score of the Social Interaction Skills Scale, with the differences favoring the post-measurement. The obtained Z value was 2.56 at a significance level of Sig = 0.010. This finding indicates an improvement in the level of social interaction skills among the children with Autism Spectrum Disorder (ASD) who participated in the study following the implementation of the integrated play-based program.

The researcher attributes this finding to the positive effect of the integrated play-based program and the group-based interactive activities it included, which contributed effectively to developing social interaction skills among children with Autism Spectrum Disorder. The program was scientifically designed to combine ease and simplicity of performance with enjoyment and fun, thereby providing an engaging and supportive educational environment based on organized and repeated social situations. This environment offered the children various opportunities to interact with others, respond to them, and participate in group activities.

The researcher also attributes this improvement to the nature of the activities included in the program, which provided the children with opportunities to practice social skills directly and repeatedly, such as initiating interaction, participation, cooperation, turn taking, adherence to rules, and responding to others. Repeated exposure to these situations within a play-based context helped the children develop their ability to use these skills more effectively, which was positively reflected in their level of social interaction in the post-measurement.

This finding is consistent with the general trend in the literature emphasizing the importance of using group play and peer interaction in developing social skills among children with Autism Spectrum Disorder, particularly skills related to communication, reciprocal interaction, and participation in-group activities. In this regard, Ball (1996) and Mashhour (2016) reported the effectiveness of group play in developing social skills among children with Autism Spectrum Disorder. Similarly, Wolffberg et al (2015) emphasized the importance of group play, teamwork, cooperation, turn taking, and other skills that help children with Autism Spectrum Disorder integrate more effectively into their social environment with peers and family members.

This finding is consistent with Goldstein (2002), who, in a review of empirical studies on communication interventions for children with autism, reported documented benefits of several intervention procedures in expanding children's communication repertoires. The review also highlighted interventions aimed at promoting social and communicative interactions, emphasizing the importance of providing structured learning opportunities through which children can repeatedly practice communication and interaction with others. This interpretation is further supported by Bauminger-Zviely and Shefer (2021), who developed and evaluated the Autism Peer Interaction Observation Scale (APIOS) to examine preschoolers' spontaneous peer interactions in naturalistic settings. Their findings showed significant differences between preschoolers with autism spectrum disorder and typically developing peers across the different domains of social-communication behavior

assessed by the scale. Moreover, more typical peer interaction patterns among children with autism spectrum disorder were associated with better adaptive and socialization skills and fewer social atypicalities. These findings support the present study by emphasizing the importance of providing children with autism spectrum disorder with structured and repeated opportunities to engage with peers, practice social-communication behaviors, and participate in reciprocal social interactions...

In the same context, the findings of the present study regarding participation and group cooperation are consistent with Gresham and Elliott (2008), who emphasized the importance of social and adaptive skills, such as following instructions, participation, and interaction with others, in helping children adapt to different social situations and enhancing their ability to participate and become socially integrated.

The improvement observed in the post-measurement can also be explained by the opportunities for interaction provided by the program in relatively natural social situations. The child's role was not limited to performing activities individually; rather, many activities required the child to interact with peers, share toys and materials, wait for their turn, and respond to their directions and initiatives. Such repeated practice may reduce the child's reluctance to interact and increase their ability to engage in social activities.

5- Conclusion

Based on the foregoing, the researcher concludes that the statistically significant differences between the pre- and post-measurements, which favored the post-measurement, indicate the positive effect of the integrated play-based program in developing social interaction skills among children with Autism Spectrum Disorder. The findings suggest that the program contributed to improving children’s communication, participation, cooperation, turn taking, and peer interaction skills. Thus, the integrated play-based program can be considered an effective approach for supporting the development of social interaction skills among children with Autism Spectrum Disorder.

6- Recommendations :

Based on the findings of the present study, the researcher recommends the following:

1. Integrating structured play-based activities into educational and intervention programs designed for children with Autism Spectrum Disorder, given their potential role in promoting social interaction skills.
2. Providing children with Autism Spectrum Disorder with regular opportunities to participate in inclusive group play activities that encourage communication, cooperation, turn taking, and interaction with peers.
3. Training teachers, special education professionals, and caregivers on the effective use of integrated play-based strategies to promote social interaction and participation among children with Autism Spectrum Disorder.
4. Designing educational activities that are appropriate to children’s developmental characteristics and individual needs, while incorporating enjoyable and motivating elements to increase their engagement and participation.
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