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The Effectiveness of the TEACCH Program in Developing Independent Skills for Students with Autism Spectrum Disorder

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Abstract

This study evaluated the effectiveness of the TEACCH program in enhancing independent living skills among children with autism spectrum disorder (ASD) at Alia Center. Employing a mixed-methods design, the study involved five children with ASD (four boys and one girl) aged between 5 and 7 years. Data was collected using a variety of tools developed by the researcher, including an independent living skills scale, a parent questionnaire, and an observation form completed by professionals working with the children. Quantitative data were analyzed using descriptive statistics, including means and percentages, while qualitative data were examined through narrative analysis. The results demonstrated that the TEACCH program effectively supported the development of independent skills in areas such as self-care, communication, and managing time and tasks. Based on these findings, the study recommends the continued implementation of the TEACCH program in future training cycles, alongside regular evaluations to monitor its effectiveness and the introduction of modifications as needed to enhance program outcomes.

Keywords: *TEACCH program, independent living skills, children with autism spectrum disorder (ASD)*

1. INTRODUCTION

Autism Spectrum Disorder (ASD) remains one of the most debated conditions among researchers due to the ongoing uncertainty surrounding its causes (Al-Qamish & Maaita, 2011). Individuals with ASD face a pervasive developmental disorder that impacts various developmental domains, leading to challenges in language, social communication, adaptability, and independence. Among these challenges, difficulties in developing independent living skills significantly affect their behavior, participation in daily activities, and overall quality of life, often resulting in social isolation (Sarris, 2024). As highlighted by Baker et al. (2021), focusing on daily living and adaptive skills such as self-care and organization not only enhances independence but also supports participation in activities, reduces behavioral challenges, and improves the quality of life for children with ASD.

Recognizing the critical role of fostering independence, programs that prioritize the development of daily living skills have become a cornerstone in intervention and rehabilitation for children with ASD. Approaches such as sensory development training, occupational therapy, and Applied Behavior Analysis (ABA) have shown positive outcomes in building these skills (Schaaf et al., 2005; Matson et al., 2012). Furthermore, research by Madbouly (2006) and Suleiman (2016) confirms that structured training programs can assist children with ASD in overcoming developmental barriers, thereby increasing their independence. One notable initiative, the Treatment and Education of Autistic and Related Communication-Handicapped Children (TEACCH) program, was established in 1972 at the University of North Carolina at Chapel Hill under the leadership of Dr. Eric Schopler. The TEACCH program provides clinical support while implementing structured teaching strategies that help children with ASD develop independence in self-care, communication, and managing daily tasks (Shea, 2013).

The research issue presented in this study originated from the investigator's observations in the capacity of a supervisor within an early intervention program, during which it became apparent that numerous children diagnosed with autism spectrum disorder (ASD) demonstrated inadequate independent living capabilities, even while enrolled in educational initiatives. Consequently, Al-Otaibi (2019) elucidates that the insufficiency of specialized programs within the Arab region exacerbates these difficulties, thereby underscoring the pressing necessity for the implementation

of effective intervention methodologies. Risnawati et al. (2025) assert that as endeavors to cultivate independent living skills aimed at facilitating the social integration of children with ASD intensify, concurrently with initiatives designed to mitigate challenges such as communication obstacles, repetitive behaviors, and sensory sensitivities, it becomes imperative to identify effective strategies to enhance these skills

Additionally, the Bahrain laws and policies of persons with disabilities (Bahrain Law No. 74/2006; 2006), emphasize the importance of training and rehabilitation in daily living skills for people with disabilities, aligning with global directives such as the UN Convention on the Rights of Persons with Disabilities (2006). Given this context, there is a pressing need to explore effective methods to enhance the independence of children with ASD.

Based on this context, the central research question guiding this study is: **How effective is the TEACCH program in developing independent skills among students with autism spectrum disorder?**

From this main question, two sub-questions emerge:

1. Which independent skills can be enhanced through the TEACCH program?
2. Which independence skills demonstrate the greatest improvement in response to the TEACCH program?

The objectives of this research are to identify the independence skills that can be developed through the TEACCH program, determine which skills respond most effectively, and assess the overall effectiveness of the TEACCH program in promoting independence among children with ASD.

By addressing these objectives, the study contributes both theoretically and practically to the field. Theoretically, it enriches the literature on effective interventions for ASD, particularly in the Arab context. Practically, it offers insights for service providers, educators, and families seeking effective strategies to enhance the independence of children with ASD, thereby supporting their successful integration into society and reducing the burden on caregivers.

2. LITERATURE REVIEW

2.1 Autism Spectrum Disorder (ASD)

Autism Spectrum Disorder (ASD) is recognized as a developmental condition that impacts several areas of growth, particularly in social communication and interaction, while also presenting with restricted and repetitive patterns of behavior, interests, and activities (APA, 2000). The DSM-V further characterizes ASD as a neurodevelopmental disorder involving persistent challenges in social communication across diverse contexts, including limitations in social exchanges, non-verbal communication, and the acquisition of skills necessary for engaging in social interactions (Mohammed, 2022, p. 21). Within the context of this study, the participating children with autism are defined as individuals exhibiting difficulties in language, social communication, and behavioral regulation, alongside atypical sensory processing and restricted, repetitive interests. Considering these challenges, Baker et al. (2021) underscore the importance of investigating factors that influence the development of independence in individuals with ASD by closely examining adaptive behaviors, such as socialization, communication, and daily living skills, to address gaps in achieving developmental progress. Consistent with this perspective, Onwumere et al. (2021) point out that despite an increasing number of autistic students entering mainstream educational settings with the potential for grade-level academic performance, there remains an insufficient focus on fostering executive functioning, self-regulation, daily living skills, and self-determination skills that are vital for promoting independence and facilitating meaningful societal integration for individuals with ASD. In summary, it is evident that fostering independent skills in students with ASD is of critical importance, as these skills significantly contribute to preparing them for greater adaptability and successful participation within their surrounding environments.

2.2 Independence skills

Al-Otaibi (2018) defines independent skills as essential abilities, including self-care, social, academic, communication, and vocational skills that enable individuals to perform daily and life tasks autonomously, thereby fostering personal independence and enhancing quality of life. The World Health Organization (WHO) describes independent life skills as the capacity to adjust and respond constructively, allowing individuals to manage daily demands and challenges effectively (WHO, 2005). In line with this perspective, the present study describes independent skills as the ability to manage daily tasks and personal care without full reliance on others. This includes skills related to personal hygiene and self-care, educational abilities such as task organization and time management, communication skills, and self-expression. These areas were systematically evaluated in this research using various instruments, including the Independence Skills Scale, Independence Skills Questionnaire, Independence Skills Observation Form, and indicators of behaviors that reflect independence. Individuals with ASD often encounter challenges in performing independent tasks, a difficulty rooted in the core characteristics of the condition and worsened by executive functioning deficits that impair their ability to initiate tasks and generalize skills across different contexts (Hume et al., 2009).

Given the multifaceted challenges faced by individuals with ASD, numerous intervention programs have focused on enhancing independent skills to support daily functioning and social integration. Tamm et al. (2024) evaluated the initial effectiveness of the school-based Achieving Independence and Mastery in School intervention through a pilot randomized clinical trial, revealing small to moderate improvements in participants' academic executive functioning compared to a waitlist control group, thereby illustrating the promise of targeted school interventions in promoting independence among students with ASD. Similarly,

Abdulwahab and Shihab (2018) examined a life skills training program with six children aged 6–10, reporting post-intervention gains in independent skills, particularly in social domains. Alharbi (2018) explored the role of assistive technology, utilizing digital applications and tablets with a sample of 12 autistic children, and found notable enhancements in communication, social interaction, and attention span. Abdel-Hamid (2019) implemented a structured training program incorporating visual schedules and repetitive activities, coupled with parental guidance, for autistic children aged 5–6, resulting in improvements in basic self-care skills. Al-Qahtani (2020) demonstrated that an occupational therapy program effectively strengthened the motor skills necessary for self-care in autistic children. Ahmed (2020), using a quasi-experimental design with 60 children in Saudi Arabia, confirmed the effectiveness of an Applied Behavior Analysis-based training program in developing life skills, noting the superiority of indoctrination strategies over shaping methods.

Despite the effectiveness demonstrated by these diverse intervention programs in enhancing independent skills among children with ASD, there remains a clear need for further research to identify structured, evidence-based approaches that can be consistently applied within different educational and cultural contexts to ensure sustainable skill development and successful social integration for these children.

2.3 TEACCH program

Treatment and Education of Autistic and related Communication-handicapped Children (TEACCH) is an educational and training program specifically designed to help children with autism develop their independence, communication, task, and time management skills (Virues-Ortega et al., 2013). This program was founded by Dr. Eric Schopler and his

colleagues in 1964 at the University of North Carolina in the United States. Septianingrum et al. (2024) highlight that the TEACCH method capitalizes on the visual learning strengths and need for structured routines characteristic of children with autism by employing visual schedules and segmenting tasks into manageable components, thereby clarifying expectations and promoting independence alongside daily living skills. Similarly, Al-Raziqat (2004) describes TEACCH as an intervention aimed at fostering autonomy in individuals with autism through environmental modifications and the development of skills that enhance their comprehension of their surroundings. Supporting this perspective, Schopler et al. (1995) emphasize that TEACCH is prioritized in intervention contexts due to its alignment with the 'culture of autism,' making it more attuned to the cognitive and behavioral profiles of individuals on the spectrum than other approaches.

A body of research underscores the effectiveness of the TEACCH program in promoting various functional skills among individuals with autism. Ahmed and Abdelkader (2022), using a quasi-experimental design with pre- and post-observational measures on a small sample in Algeria, reported that TEACCH successfully facilitated the development of behavioral and independent skills such as dressing and self-feeding in children with autism. Similarly, Siaperas and Brown (2006) found that a six-month structured TEACCH intervention with 12 children in Greece led to significant gains in visual and auditory perception and oral communication abilities. Supporting these findings, Zhou et al. (2022), through a meta-analysis employing Tau-U effect sizes and moderator analyses, confirmed TEACCH's efficacy in enhancing independent task performance in children with ASD, reinforcing its evidence-based application in educational settings. Additionally, Septianingrum (2024) conducted a qualitative study at TKLB River Kids demonstrating that TEACCH methods—through visual schedules and structured task systems—significantly improved life skills, including self-care, communication, motor, and social skills in children with autism, while emphasizing the critical role of intrinsic motivation, cognitive capacity, and external supports such as parental involvement in fostering independence and reducing caregiver stress.

In this context, it is crucial to delineate the independence skills that the TEACCH program can cultivate and assess their responsiveness to structured strategies. While prior research indicates enhancements in self-care, communication, and task organization, further investigation is required to elucidate the progression of these skills across diverse cultural and educational settings, particularly in Arab contexts with scarce specialized programs (Al-Otaibi, 2019). Furthermore, recognizing the elements that promote or impede skill acquisition—such as familial involvement, educational support, and the child's cognitive characteristics—can optimize the application of TEACCH in fostering daily living skills in students with ASD. Investigating these factors will aid in customizing interventions to address the specific needs of children with autism, thus facilitating their autonomy and enhancing their integration within familial, educational, and community settings.

3. Methodology

This investigation utilized a mixed-methods framework to assess the efficacy of the TEACCH program in promoting independent skills among children diagnosed with ASD within an early intervention center located in the Kingdom of Bahrain. To augment the trustworthiness and profundity of the findings, the study employed a variety of data collection instruments, which included observational forms for the acquisition of descriptive qualitative data and both the autonomy scale and a structured questionnaire for the collection of quantitative data. As articulated by Al-Saeed (2021), the mixed-methods design is beneficial due to its ability to amalgamate data from both quantitative and qualitative modalities, thus permitting a more nuanced interpretation of the results. This amalgamation fosters a holistic comprehension of the specific skills targeted, consequently ensuring the precision and comprehensiveness of the findings derived**.**

3.1 Participants

The study was conducted in a single classroom with five children (four boys, one girl) aged 5–7 years, selected due to their critical need for developing independent skills during early

intervention. This gender distribution aligns with the typical 4:1 autism prevalence ratio, enhancing the relevance and accuracy of data analysis. Additionally, the children's educational plans included goals related to independence, ensuring alignment with the TEACCH-based intervention objectives. The program was implemented over six weeks with daily 90-minute sessions (five days a week), dedicating equal time to self-care, classroom task independence, and communication skills.

3.2 Instruments

1-Parents' Independence Skills Questionnaire

The researcher utilized a 36-item, researcher-developed questionnaire covering self-care, communication, and time/task management skills, using a five-point Likert scale to gather parent-reported data on the autonomy levels and behaviors of the five participating students at home. The questionnaire was administered to parents after the first two-week TEACCH program cycle and re-administered following the second four-week cycle to assess changes in student skills.

2-Teacher's Independence Skills Scale

The researcher utilized a self-developed scale comprising 34 items distributed across three key domains: self-care, communication, and time and task management. This scale was administered to the sample of five children during both the first and second phases of implementation to gather data on the students' autonomy skills within the school environment across these targeted domains.

3-Observation Form

An observation form developed by the researcher, comprising 16 behaviorally anchored items reflecting various aspects of independence skills, was utilized continuously throughout the study.

To gather descriptive data on students' independence-related behaviors, 20 completed observation forms were collected from teachers and specialists working with the sample. Data from these forms were analyzed following both the first and second cycles of the program to monitor changes in the students' independence levels.

3.3 Research Design

This design utilizes iterative cycles that include planning, implementation, observation, reflection, data collection and analysis, followed by adjustments based on the findings, with the cycle then repeated to ensure continuous improvement. It is distinguished by its focus on enhancing practices and addressing specific challenges while fostering innovation through the testing, refinement, and adaptation of new ideas in each cycle by identifying strengths and areas for improvement and applying modifications promptly (Al-Khatib & Al-Hadidi, 2017).

Data Collection and Results

Comparative data analysis between the first and second cycles

To address the primary research question, "*How effective is the TEACCH program in developing independent skills among students with autism spectrum disorder?".* The researcher analyzed and correlated the results derived from the three research tools in the two cycles.

Table 1 presents the comparative mean scores of the Parents' Independence Skills Questionnaire across its three axes, illustrating consistent improvements in all targeted independence skills following the implementation of the modified TEACCH program in the second cycle. The overall mean for the second application increased to 2.66, compared to 2.511 in the first cycle, reflecting measurable progress in skill acquisition among the participants. Specifically, self-care skills showed an increase from 2.61 to 2.78, communication skills improved

from 2.60 to 2.76, while time and task organization skills rose from 2.325 to 2.45. These results indicate that the adjustments made to the TEACCH program, including enhanced parental involvement and targeted intervention strategies, contributed to notable advancements in the development of independence skills in children with ASD during the second cycle.

Table 1
Summary of comparing the results of the means of the first and the second cycles according to the parents' Independence Skills Questionnaire

Summary of the three axes according to the questionnaire	**Mean for cycle 1**	**Mean for cycle 2**
Overall average for the first axis: Self-care skills	2.61	2.78
Means for the second axis - communication skills	2.6	2.76
Means for Axis III - Time and task organization skills	2.325	2.45
Total	2.511	2.66

Figure 1 illustrates the comparative means of the Teacher's Independence Skills Scale across the first and second cycles. The data reveal notable improvements in several items following the second implementation of the TEACCH program.

In the domain of self-care skills, item 4 (clearing the table after eating) improved from 1.8 to 2.2, while item 5 (disposing of waste appropriately) showed a similar increase from 1.8 to 2.2. Within the public appearance subdomain, enhancements were observed in five items: item 12 (putting on a shirt independently) increased from 2 to 2.4, item 13 (putting on pants without assistance) rose to 2.2, and item 15 (zipper closure without assistance) demonstrated a modest increase of 0.2 points. Regarding communication skills, improvements were evident in four of the ten items. Item 22 (requesting help when needed) increased from 1.6 to 2.2, item 24 (following one-sentence instructions) rose from 3.2 to 3.6, item 27 (using words for expression) improved from 2 to 2.4, and item 28 (using gestures and signs) increased from 3 to 3.2. In the time and task organization skills axis, four items demonstrated gains: item 29 (initiating household tasks

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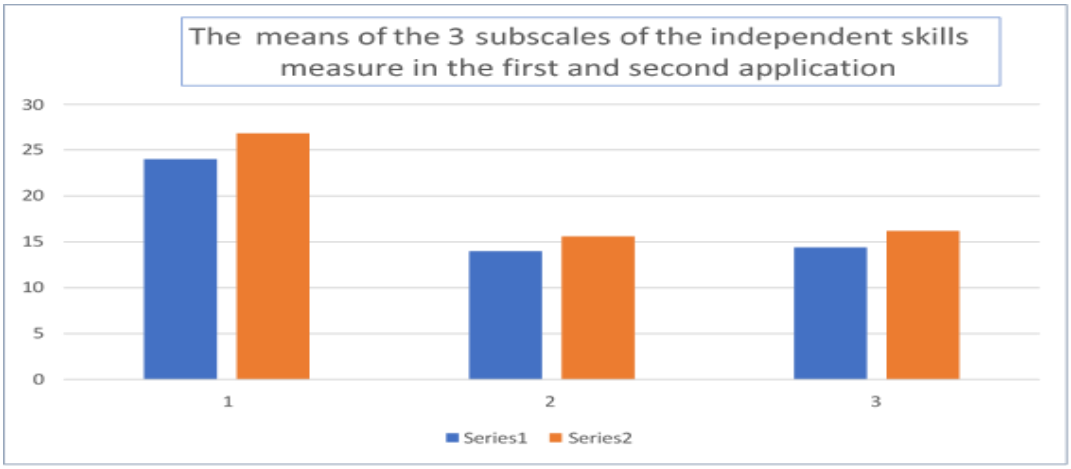
independently) increased from 1.6 to 2, item 30 (completing tasks without interruption) rose from 1.6 to 1.8, and item 31 (transitioning between activities independently) also increased from 1.6 to 1.8. The overall means for this axis improved from 2.325 to 2.45, reflecting a 2.5% increase.

Figure 1

Comparative Means of Teacher's Independence Skills Scale in the First and Second Cycles



Regarding the qualitative findings from the observation forms, multiple statements reflected notable improvements in children's independent behaviors across the two cycles. Observations such as "smooth transitions between activities," "increased awareness of the classroom environment," "understanding of the daily schedule," "reduced stress with more effective interaction," "frequent use of gestures and picture exchange to express needs," and "greater independence in self-care routines including handwashing, table cleaning, and waste disposal" collectively highlighted clear progress in independence-related behaviors. These qualitative indicators suggest that the children became more adept at adapting to their environment, comprehending expectations, and responding appropriately to instructions, which contributed to reduced stress and discomfort compared to the pre-intervention phase. Collectively, these results demonstrate measurable gains across multiple independence skills following the modifications

implemented in the second cycle of the TEACCH program, aligning with the program's goals to enhance functional autonomy among students with ASD.

To address the first sub-question, *"Which independent skills can be enhanced through the TEACCH program?"*, the researcher conducted a comparative analysis of the data across the first and second cycles. As shown in Table 2, the first axis (self-care skills) demonstrated notable progress, with the mean scores increasing from 24 (50%) in the first application to 26.8 (55.8%) in the second. Improvements were observed in 9 out of 16 items, including item 2 (using a cup for drinking), item 4 (clearing the table after eating), and item 5 (disposing of waste properly), aligning with the trends reported in the parent questionnaires.

Regarding the second axis (communication skills), the results indicated advancements in 6 out of 9 assessed skills. For instance, item 17 (maintaining eye contact for 30 seconds) improved from 2.2 to 2.6 on the independence skills scale, although this was not equally reflected in parent reports, which are likely due to differences in observation accuracy at home. Both the scale and parent questionnaires recorded improvements in item 19 (context-appropriate linguistic expression using three words), item 20 (use of alternative communication tools), item 21 (use of gestures), item 22 (requesting assistance when needed), and item 23 (following simple instructions), albeit with varying degrees of change across measures.

In the third axis (time and task organization skills), 6 of the 9 targeted skills demonstrated growth, with the overall mean rising from 14.4 (53.3%) in the first application to 16.2 (60%) in the second. Notable improvements were seen in item 26 (initiating tasks independently), item 27 (completing tasks without distraction), item 28 (transitioning between activities smoothly), and item 32 (managing the school morning routine), aligning with parent reports. Item 33 (adapting to routine changes) showed improvement on the scale (from 1.8 to 2.0) but not in the parent questionnaire, which may reflect environmental differences and the varying consistency of support strategies between home and school contexts.

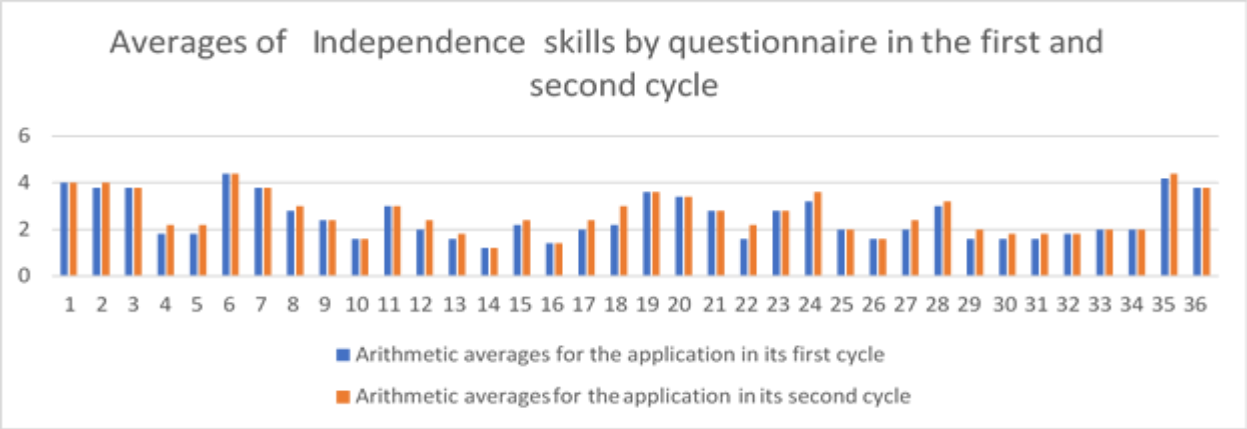
Table 2

The means of the Teacher's Independence Skills Scale for children with autism spectrum disorder (comparing the first and second cycle)

		Items	First course	Second cycle
First axis: Self-care skills				
First dimension Eating	1	Using a spoon to eat	2.4	2.4
	2	Using a cup for a drink	2	2.4
	3	Eating snack foods (sandwiches, fries, etc.)	2.6	2.6
	4	Clearing the table after eating	1.4	1.8
	5	Putting waste in the designated place	1.4	1.8
Second dimension	6	Hand washing	1.6	1.6
	7	Washing the face	1.2	1.2
	8	combing hair	1	1
	9	Brushing teeth	1	1.2
	10	Toileting in restrooms	1	1
Third dimension General	11	Wearing a T-shirt	1.6	1.8
	12	Wearing pants	1.6	1.8
	13	Wear socks	1	1
	14	Wearing shoes	1.2	1.4
	15	Zipper closure	1.2	1.4
	16	Dressing	1.8	2.4
*** Maximum possible score for the first axis 48**			**24**	**26.8**
Percentage			**50%**	**55.8 %**
Second axis: Communication skills				
	17	Ability to make eye contact for 30 seconds continuously	2.2	2.6
	18	Using facial expressions to express emotions (smiling at others)	2.2	2.2
	19	Linguistic expression using 3 words as appropriate to the context	1	1.2
	20	Use alternative communication tools (e.g., picture exchange language) when needed	1.2	1.4
	21	Using gestures or signs to express	1.6	1.8
	22	Asking for help when you need it	1.4	1.8
	23	Follow simple one-sentence instructions	1.8	2
	24	Start interacting with others	1.2	1.2
	25	Participating in interactive activities with peers	1.4	1.4
Maximum possible score for the second axis 27 *			**14**	**15.6**
Percentage			**51.8%**	**57.7%**
Third axis: Organizing tasks and time				
	26	Start tasks independently	1.4	1.6
	27	Complete tasks to the end without interruptions or Distractions	1	1.4
	28	Transition between activities without resistance	2	2.2
	29	Organize special tools (bag or toy)	1	1

30	Walking in line	2.4	2.4
31	Following the class schedule without reminders	1.6	2
32	Managing the school morning routine	1.4	1.8
33	Adapting to changes in routine	1.8	2
34	Enjoying leisure time	1.8	1.8
***Maximum possible score for the third axis 27**		**14.4**	**16.2**
Percentage		**53.3 %**	**60 %**
Total arithmetic means scores for the three axes of the scale		**52.4**	**58.6**
***Maximum possible scale score 102**			
Percentage of the total scale		**51.3%**	**57.5%**

Figure 2
Comparison of the results of the first application with the second application and the response of the axes.



(21 out of 36 skills showed improvement in the second application)

As indicated by the analysis of the parents' Questionnaire in the first and second cycles and compared as shown in Table 2, there is a clear development in the three main areas, which can be summarized as follows:

The first axis, which focuses on self-care skills, showed progress in 9 skills, including the use of a cup for drinking, which increased from 3.8 to 4, and brushing teeth independently, which developed from 2.8 to 3. Meanwhile, the second axis, related to communication, demonstrated

progress in 4 skills, including asking for help from others when needed, which improved from 1.6 to 2. As for the third axis, concerning time and task management, it indicated progress in 4 sub-skills belonging to this axis, including starting household tasks independently, which increased from 1.6 to 2.

As for the data derived from the third tool the observation form, it indicated development in many skills, including more effective communication with the teacher, better understanding of daily tasks, smooth transitions between activities, greater self-reliance in daily tasks, and improvement in self-care skills such as handwashing and the ability to complete classroom tasks more independently and efficiently. This aligns with the findings from the independence scale and the parent's questionnaire to a large extent.

Overall, in response to the first sub-question, the analysis demonstrates that the TEACCH program effectively enhances independent skills in the areas of self-care, communication, and time and task management among children with autism spectrum disorder, as evidenced by consistent improvements across cycles in both quantitative and qualitative measures.

In addressing the second sub-question—*which independence skills demonstrate the greatest improvement in response to the TEACCH program*—the researcher analyzed the data summarized in Table 3. The comparative results indicate measurable progress across all three skill domains following the second implementation of the TEACCH program. Specifically, the first axis (self-care skills) improved from 50% to 55.8%, representing a 5.8% increase, while the second axis (communication skills) rose by 5.9%. Notably, the third axis (time and task organization skills) demonstrated the most substantial improvement, increasing by 6.7%, highlighting it as the domain most responsive to the intervention. Additionally, the total score across the five participating students increased from 52.4 to 58.6, indicating an overall enhancement in independence skills after the program's second cycle. This marked improvement is attributed to

the TEACCH program's structured, visually based approach, which emphasizes executive functioning, organization, and clear task division. These features align effectively with the development of time and task organization skills, resulting in a higher responsiveness within this domain compared to others, such as communication.

Table 3
Comparing the results of the means and percentages of the Teacher's Independence Skills Scale for the first cycle and the second cycle

Axes	**Mean and percentage for Cycle 1**	**Mean and percentage for Cycle 2**
Averages for the axis I - self-care * Maximum possible score for the first axis 48	**24**	**26.8**
Percentage	**50%**	**55.8%**
Averages for Axis II - Communication Skills *Maximum possible score for the second axis **27**	**14**	**15.6**
Percentage	**51.8%**	**57.7%**
Averages for Axis III _ Time and Task Organization Skills *Maximum possible score for the third axis **27**	**14.4**	**16.2**
Percentage	**53.3%**	**60%**
Total mean scores for the three axes of the scale *Maximum possible scale score 102	**52.4**	**58.6**
Percentage of the total scale	**51.3%**	**57.5%**

As for the data collected by the researcher from the parents' questionnaire, and comparing the first and second cycles, the results showed that self-care skills which exhibited the highest response to the program compared to the other two areas: communication and time management and tasks. As per Table 4 , the first axis self-care scored improvement with 6.5% while the communication skills scored 6.15% and the task and time organization 5.376% .The researcher attributed the differences in results between the Teacher's scale of the participants at the center and the parents'

responses to variations in the support provided by parents in the home environment and differences in preparing a supportive environment, which are considered some of the most important factors for the success of the TEACCH program. The discrepancy may also be due to better provision of visual support and schedules for certain skills compared to others, resulting in a more favorable response in some skills to the program than in other skills. Additionally, the higher response of self-care skills in the home environment may be due to increased focus and attention from the parents of the sample on these skills more than on those belonging to the other two areas, communication and time& task organization, due to the importance of the skills in this area in the child's daily life and their frequent natural occurrence in the home environment, which contributed to their more advanced development in comparison to the other skills.

Table 4

Comparing the results of the means and percentages of the Parents questionnaire for the first cycle and the second cycle

Summary of the three axes according to the questionnaire	Mean for Cycle 1	Mean for Cycle 2	Difference in percentage between second and first Cycles
Overall average for the first axis: Self-care skills	**2.61**	**2.78**	**6.5%**
Means for the second axis - communication skills	**2.6**	**2.76**	**6.15%**
Means for Axis III - Time and task organization skills	**2.325**	**2.45**	**5.376%**

As for the descriptive data derived from the observation form, it has shown response and development in all the skills belonging to the three areas in a relatively close manner. However, the statements indicating the development of time & task organization skills were repeated in most situations, (he seems to understand the requirements better, moves more smoothly and comfortably in his environment due to understanding the daily schedule, needs less support from the teacher as

visual instructions appear clearer, and the schedules help in completing tasks on time, the images provide a sense of comfort as he understands what is expected of it) supporting the researcher's findings from the independence skills teacher's scale, which indicated that the third area, related to time and task organization had the most response to the TEACCH program compared to the other two areas.

Discussion

The findings of this procedural research demonstrated clear progress in the independence skills of the participating children, as evidenced by data collected through the observation forms, parent questionnaires, and the independence skills scale. These results confirmed improvements across all three domains of independence (self-care, communication, and time and task organization) following the second implementation of the TEACCH program, with varying rates of progress across the domains, as detailed in the preceding analysis. Notably, the levels of improvement recorded by the researcher using the scale differed from those reported by parents via the questionnaire. This discrepancy is attributed to the critical role of structured visual supports and organized environments in fostering independence, consistent with the TEACCH framework, which may not have been consistently available within home environments. This variation likely contributed to greater progress in skills observed within the classroom context, particularly in areas related to time and task organization. The program demonstrated clear effectiveness in enhancing self-care skills, with noticeable gains in sub-skills such as using a cup for drinking, clearing the table, disposing of waste appropriately, zipping, and dressing. These findings align with those reported by Madbouly (2006) and Ahmed and Abdelkader (2022), both of which highlighted the TEACCH program's positive impact on the development of self-care skills. The researcher attributes this effectiveness to the program's structured and systematic approach, which

deconstructs complex tasks into manageable, visually supported steps and incorporates routine repetition, thereby facilitating mastery of these skills for children with ASD. In terms of communication skills, the results also indicated improvement in areas such as maintaining eye contact, using gestures to express needs, and requesting assistance when necessary. However, limited progress was observed in skills related to peer interaction and social play. This may be due to the TEACCH program's emphasis on structured routines over social interaction, making it less impactful in developing skills tied to social engagement.

Regarding the domain of time and task organization, notable improvements were observed, particularly in skills such as initiating tasks independently, completing tasks, and following classroom routines without reminders. These findings are consistent with the outcomes reported by Schopler et al. (1995) and Siaperas and Brown (2006), which similarly highlighted the effectiveness of the TEACCH program in promoting independence among children with ASD. Additionally, the use of visual schedules and structured pictorial supports aligns with the findings of Abdelhamid (2019), whose work demonstrated the effectiveness of such tools in enhancing life skills related to self-care and task organization.

Overall, the researcher concludes that the TEACCH program's structured, visually organized, and repetitive approach is well-aligned with the learning needs of children with ASD, who often benefit from clear routines and visual cues. This alignment underpins the program's effectiveness in enhancing independence skills, particularly in the domains of self-care and time and task organization, while also supporting targeted aspects of communication skills.

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Conclusion

The findings of this study confirm the effectiveness of the TEACCH program in fostering the development of essential skills among children with autism spectrum disorder. By employing structured visual supports and systematic instructional strategies, the program facilitates the acquisition of critical self-care skills, including dressing, eating, and maintaining personal hygiene. The integration of visual communication systems, such as the Picture Exchange Communication System (PECS), further supports the development of communication skills, enabling children to express their needs more effectively and reducing frustration associated with communication difficulties. Additionally, the structured framework of the TEACCH program significantly contributes to enhancing time and task management skills. Using visual schedules and an organized learning environment, children develop the ability to comprehend tasks, adhere to routines, and complete activities with increasing levels of independence, thereby decreasing their reliance on direct teacher support. This structured and predictable approach also aids in promoting positive behavioral adaptations by reducing the occurrence of maladaptive behaviors, such as tantrums, as children gain a clearer understanding of daily expectations and transitions.

Overall, the TEACCH program's comprehensive use of visual supports and structured teaching strategies has been shown to effectively promote independence across self-care, communication, and time and task management domains, addressing multiple areas of need for children with autism.

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Recommendations

Considering the study's findings, the researchers propose the following recommendations:

1. Sustain the implementation of the TEACCH program with the participating children through successive procedural cycles, enabling ongoing evaluation of its effectiveness and allowing for programmatic adjustments at each stage to maximize outcomes.

2. Provide parents with regular training on the implementation of the program within the home environment to support skill generalization across contexts, facilitating higher levels of independence for the children.

3. Extend the application of the TEACCH program to additional children who exhibit similar characteristics and needs as those in the current sample, thereby broadening the benefits to all children enrolled in the early intervention program at Alia Center.

4. Organize specialized training workshops for teachers and practitioners responsible for the program's delivery to enhance implementation quality and optimize outcomes.

5. Offer family counseling services to improve the quality of life for children with ASD and strengthen family support systems, thereby promoting effective program implementation within the home environment and improving the overall effectiveness of the intervention.

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