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The Efficiency of a UDL-based Program in Developing Language Skills and Social Interaction for Students With ASD

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Abstract: The purpose of the study was to evaluate the efficacy of a UDL-based program for enhancing the social communication abilities and expressive and receptive language skills of children with ASDs. Finding out how much the program still works to help autistic children with their expressive, receptive and social communication skills after a month of participation. A total of 20 males and females made up the study sample, which was randomly split into two groups: an experimental group (n = 10) and a control group (n = 10). The study found that, in the post-measurement on the expressive and receptive language scale and social communication skills, there were statistically significant differences in the mean scores of the control and experimental groups in favor of the experimental group. The study also showed that there are statistically significant differences in favor of the post-measurement between the experimental group's mean scores in receptive language for expressive language and social communication abilities before and after the program's implementation. Additionally, the experimental groups mean rankings on the expressive and receptive language scale and its social communication abilities in the post-test and follow-up assessments show no statistically significant alterations.

Keywords: UDL-based Program, Developing Language Skills, Social Interaction, ASD.

1 Introduction

Children with autism also have difficulties with expressive and receptive language which includes form, content, and use of language [1]. The American behavioral psychologist B. F. Skinner proposed the behavioral theory, which states that learning and memory for behaviors depend on considering both the stimuli that came before them and the effects of those stimuli. There are many researches and studies that have proven the effectiveness of applied behavior analysis or behavioral therapy in fully and permanently improving many skills and areas important to most autistic individuals [2]. Analytical Behavior therapy focuses on teaching small, measurable, precise, and structured units of behavior for each skill that autistic children do not acquire from simple responses such as looking at others to spontaneous communication and social interaction [3]. Learning analytical processing entails learning a series of discrete subtasks. To promote appropriate and correct responses, individualized education frequently involves the use of physical or verbal reinforcement and guidance, which are progressively hidden as the learner becomes less reliant on them [4].

Language expresses a person's personality and is one of the most important features that distinguish him from other living creatures because it is the means by which a person can communicate information to those around him [5]. Communication is the primary purpose of language because humans are social beings that have an urgent need to communicate with members of their community [6]. In order to communicate properly, there must be a sender, a message, an appropriate transmitting the message, and a receiver [7]. Spoken language is the most important means that humans learn to communicate with each other [5].

There are those who see that language as just a set of spoken symbols that are used as a means of expressing or communicating with others [8]. Language can also be defined as a system of symbols agreed upon in a particular culture or among members of a particular group or gender, provided that this system is characterized by accuracy and organized according to specific rules that make it one of the means of communication [9]. The first major component of language is receptive language, which involves an individual's capacity to take in, process, and use language without directly uttering any words [10]. The second major component of language is expressive language, which includes both spoken and written forms as well as sign language, which manifests itself in an individual's linguistic abilities [11]. The American Hearing and Speech-Language Association provides perhaps the most exhaustive definition of language: language is a dynamic, multifaceted system of idiomatic symbols deployed across a wide range of cognitive and communicative contexts [12].

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Language is a set of common symbols and signs in which ideas are recorded in order to reach an understanding of the common communication process [11]. In order for this process to be successful, the speaker and listener must use these symbols and signals appropriately and correctly [13]. When one of the parties (the speaker or the listener) has a disturbance in the mechanism of sending or receiving information, the process of communication and linguistic and verbal understanding is ineffective [14].

Autism is considered a behavioral and emotional disorder and is one of the most difficult and complex developmental disabilities not only for the child but for his family as well [15]. The difficulty of this disability lies in its impact on social and communication skills, and on limited interests and activities [13]. In childhood, autistic children fail compared to their normal peers in the areas of communication, social skills and cognition. In addition to the emergence of non-functional behaviors such as self-exciting behaviors, which are repetitive behaviors such as hand flapping, and they may develop some actions such as biting hands, hitting the head, poor eye contact, hyperactivity and attention deficit [16]. Although the degrees of severity vary greatly from one individual to another, children with autism share one trait that is poor functional communication skills in a social context [17]. Also, individuals with autism display limitations in both expressive and receptive language as they fail to develop spontaneously imitation, gestures, and nonverbal means [18]. Communication disorders in general, and disorders of language use in particular, in individuals with autism are the main characteristics of the definition of autism [17].

Individuals with autism suffer from communication skills problems ranging from a lack of speech to a defect in the functional use of speech due to the inability to use means of communication such as speech and nonverbal communication, and communication functions such as requesting, commenting, and searching for information [19, 20]. In addition to the presence of special means of interaction, such as repetition of speech or quarrelling, and aggressive behavior as an alternative means of communication [21]. Children with autism also have difficulties with expressive and receptive language which includes form, content, and use of language [22]. These language difficulties increase the possibility of using alternative and compensatory communication systems to compensate for the shortcomings in expressive and receptive language [21].

While research suggests that a child will begin to recognize objects before they are able to name them, the order of expressive and receptive language in the literature is not consistently agreed upon [23]. In reality, the receptive response does not have to be learned on the label for the expressive response to appear, or vice versa. As a result, it is recommended that both of these skills be honed simultaneously [24]. The autistic child's language develops slowly or may not develop at all if he is not provided with rehabilitation programs, which is one of the crucial things that can be observed on him [25]. In addition to using words without a clear, defined meaning, autistic individuals frequently repeat words or phrases that have no real meaning to them. We also frequently observe autistic individuals employing signs in place of words and refraining from using voice to properly communicate [26]. This makes it evident that a child with autism has a decreased ability to communicate verbally and linguistically, which puts a barrier between the child and his environment [27]. He doesn't get to experience childhood the way his common classmates do, which causes him to feel insecure on the inside because they are thrust into social circumstances for which they are unprepared [26].

Therefore, interactive language activities that engage the child and improve his skills are needed for verbal communication skills, which comprise language, reception, and expression and are important to participate in social contact and communicate in social contexts [28]. Providing children with interactions and situations leads to an increase in their overall cognitive development. As these interactions lead to helping children apply many skills and develop their linguistic and verbal expression abilities [29]. Based on the foregoing, it is important to focus on helping children with autism disorder develop their expressive and receptive language abilities as well as discovering a variety of language activities that help these skills of children in a fun and engaging way.

Due to the fact that these patterns act as a barrier to learning and prevent children with ASD from acquiring the necessary functional abilities, it is crucial to concentrate on the behavioral and social patterns of these children [30]. As a result, emphasis was placed on the role of the teacher in the educational process and the need to enhance the standard of services offered, which calls for the creation of programs meant to help students develop their skills and overcome their deficiencies [31]. As a result, it is urgently necessary to create educational programs for kids who have autistic spectrum disorders that are helpful in helping these individuals develop acceptable language skills on the one hand and overcome their social challenges on the other. As a result, the current study aims to evaluate the efficacy of a program based on UDL in fostering social interaction and language development in students with ASD.

Research Questions

The current study makes an effort to respond to the following queries in light of the aforementioned:

1. Do the scores of the control group and the experimental group on the expressive and receptive language scale and the social communication skills scale after the program's use differ significantly from one another?

2. Do the expressive and receptive language and social communication skills ratings of the experimental group match before and after the implementation of the current study program differ significantly?

3. Did the experimental group scores significantly change on the expressive and receptive language scale and the social communication skills test in the post- and follow-up application?

Significance of the study

This study evaluated the efficacy of a UDL-based program for enhancing the social communication abilities and expressive and receptive language skills of children with ASDs. The results of the study will be useful for special education experts and teachers in understanding the methods of improving social communication abilities of students with ASDs. The results were also important to teachers in implementing daily activities with these students in the classrooms. In addition, future research can use the findings of this study to compare with other samples.

2 Literature Review

One of the intricate systems that we utilize to communicate with and share our thoughts with others around us is language. Language can be utilized in a variety of ways, including the spoken or written word, a smile, or even through facial expressions, as it is a means of communication and information exchange between children [32]. A person must have a clear notion in his head before he can articulate it effectively, which leads to clarity of expression [33]. Clarity of thought and clarity of expression are language-based concepts. When communicating ideas, the sender must select the most effective method, which could be voice, gesture, or another method. As a result, for communication to take place, the recipient must be able to grasp the symbols used by the sender and be able to change them in order to receive the message and convey it to the brain [34]. Communication breaks down when both the transmitter and the receiver are unable to use the codes correctly or when they are either having problems sending or receiving information [35]. In this study, the researcher employed a training program to help autistic children gain certain expressive and receptive language skills and social communication.

According to psychologists, language is the process by which any mental image or thought can be broken down into its constituent pieces or attributes by using words with a specific structure [36]. Ohara et al [37] indicated that language skills are the skill of expressive and receptive language, which is vocabulary and knowledge of the sequence of events, sentence structure, and conversation, as well as the linguistic perception of sounds, discrimination, and recognition of sounds. According to Paraskevi [38], language is a collection of spoken and written symbols that are governed by a particular system and have particular connotations that are familiar to children of a particular culture and that they use to express their needs as well as the needs of the society in which they live and to communicate with others. The two primary components of language are verbal language and the nonverbal language, which are both conveyed in expressive and receptive languages, respectively. Even a large sample of utterances cannot capture language since language is more than just speech [39]. According to the notion of language, sounds are the means through which each person communicates themselves.

Language is the primary means of communication and the window through which mind is reflected, revealing both the range of one's own thinking and his capacity for producing and understanding symbolic language [40]. As a result, some people describe language as a tool for exchanging or expressing ideas. Words are nothing more than symbols that signify specific concepts, which distinguishes them from basic noises that occasionally lack context and are produced accidentally [25]. A person has the ability to express ideas and opinions that are in his head as well as information that he wants to convey to others. The system of communication that includes protocols used by society to represent ideas through symbols such as (sound, letters, and words) and the rules for ordering their assembly, or "grammar of meanings," has a significant place in language [37]. Writing is a visual representation of language, whereas speech is an oral representation.

Receptive language is the knowledge a kid learns through hearing sounds and words and connecting their meanings to objects and occasions. Children's receptive language skills develop as they listen to others while being spoken to. According to Uzuegbunam et al [36], receptive language is a component of communication that involves the recipient of the information is understood. This component includes (auditory discrimination, visual discrimination, auditory remembrance, visual remembrance, and understanding). Lüddeckens et al [32] defined receptive language as a child's capacity to hear and comprehend language without vocalizing it. This capacity includes auditory discrimination, auditory understanding, and auditory memory.

Expressive language is the language used by the individual to communicate his or her needs and desires. Along with the use of signs and expressions, expressive language also contains words and grammar that specify how these words relate to phrases, sentences, and paragraphs [28]. According to Vanegas [24], the capacity of the human brain to generate the proper linguistic messages to complete the communication process is expressive language. This is accomplished by choosing the proper messages and sending them to the devices in charge of pronouncing them so that they eventually

manifest as words or other forms, which is the individual's capacity to communicate verbally.

Some children use a few consonants and a few syllables and some of them show a delay or a complete deficiency in the development of spoken language and show deafness and muteness for some words [1]. Some of them exhibit stereotyped and repetitive language, such as echolalia, in which a youngster repeats single sounds, syllables, or sentences in response to straightforward situations or events [23]. The exact reproduction of words and phrases a few seconds after hearing them is referred to as immediate echolocation, or the echo is late. Although the children were delayed in repeating it, which may span days, it is also a literal repetition that is accurate. Repetition may be fragmentary or diluted, immediate or delayed, but it never sounds exactly [8].

Language and speech are developmental phenomena that pass through several successive and interrelated stages depending on the chronological age, the level of intelligence, the degree of social, physical, and motor maturity [5]. Therefore, the language skills of autistic children do not develop in the same developmental context as their normal peers. Often, a child with ASD is able to imitate the sounds made by others. At first, the babbling is by chance, then the imitation on purpose [6]. Although these children acquire and select the sounds within language, they use them without knowing their meaning. According to Waddington and Reed [7], the main trait of autistic speech and language is a definite delay in the development of the ability to produce sounds, pronounce words, use sentences, and use cognitive aspects of verbal expression.

The Fifth Diagnostic and Statistical Manual of Mental Disorders considers ASD to have two main symptoms: The presence of stereotyped and repetitive behaviors and a lack of communication, both verbal and non-verbal. According to Brignell et al [41], the percentage of autistic children who are unable to acquire or use speech within a very narrow framework ranged between (25%-30%). While many studies indicate that (25%) to (61%) of children with autism use functional communication either to a limited extent or not at all. Autistic children with verbal abilities are unable to use language to communicate. The ability to understand the meaning and purpose of verbal and nonverbal communication precedes language development and is related in children with normal development but the language in many cases of autism develops earlier and is separate from communication [30]. Furthermore, they adopt non-adaptive actions to accomplish their communicative goals rather than finding alternate ways to express themselves and their needs to make up for the lack of communication [18].

Successful communication is crucial for children to express themselves, feel at ease and secure, and to get the support and assistance they need from peers and adults [5]. Early social competence in children is thought to be mostly dependent on communication skills, including language skills [9]. The three fundamental parts of the communication framework are form, content, and language. Children's communication skills depend on practical language skills, which are described as how language is used to express meaning [11]. The broadest definition of practical language includes behaviors that include the social and emotional aspects of interaction [5].

Since social communication is the complementary cognitive function in social interaction circumstances and since social interaction cannot exist without communication, it is one of the most crucial requirements for normal social development [13]. Children with ASD have trouble starting and maintaining social relationships with their peers. Despite the fact that they are more likely to get along with their parents, caretakers, and other individuals who can meet their needs and perceive their emotions [12]. It is not possible to conclude from this that children with ASD are unable to make friends; rather, it is more likely that they lack the skills necessary to do so, which prevents them from making friends [11]. Teaching these children social skills is crucial for their growth, as it will help them overcome issues like their inability to comprehend others' emotions or facial expressions [19]. This can be attributed to their lack of social imitation skills and their failure to grasp the reciprocal nature of social interaction situations.

A child with autism does not seem to understand what others are saying, social interaction is severely limited, and acts as if the others around them are not present [16]. Children are less likely to invite their parents to join their hobbies because they interested their parents less frequently than they see their toys and because they are more drawn to things that appeal to their immediate emotions [21]. Theory of mind provides a basis for understanding social disorders in autism. It refers to an autistic child's inability to realize that others have their own view of the world or have different ideas and plans. Tran et al [42] mentioned that the most important social characteristics of the autistic child are in the following points:

- Lack of ability to interact emotionally and socially.
- Not getting used to greeting or saying goodbye to parents.
- They are unconcerned with the parents' feelings or reactions.
- Impaired ability to make eye contact
- Difficulty understanding and comprehending spoken words and directed speech.

The concept of Universal Design for learning (UDL) emerged based on what was reached in studies and research for the need to find new methods that take into account the differences of learners in terms of abilities, preparations and tendencies [43]. The principles of UDL moved into the educational context through Meyer and Rose [43], who emphasized the need for the curriculum to include many alternatives and options that make students' access to them easier and more appropriate for all their differences. For many learners, the curriculum represents hurdles and obstacles in light of the lack of support provided to them. The UDL has changed this scenario and allowed the design of curricula that respond to the various classes [44]. UDL also improves the learning outcomes of all students by ensuring access to meaningful entries to the curriculum and accurate assessment of skills and knowledge. Walters [45] indicated that the UDL has changed the educational and educational curricula in a comprehensive way to include the largest group of students both disabled and non-disabled.

UDL is defined as a generalizing framework based on the work and functions of the brain that occur during the learning period [43]. The main goal of UDL's principles is to get rid of barriers and limits by designing things with the needs of different people in mind from the start, rather than making people adapt to these problems later (Odom et al., 2021). The ideas of UDL can be applied to general education to first remove curriculum barriers as well as enhance students' learning and help them acquire interest, information, and learning skills. The UDL learning principles are outlined as follows [46, 6]:

1. **Representation:** This approach strives to provide many, numerous, and adaptable methods of delivering content and information so that students with various learning preferences can choose how they acquire knowledge and information. This principle is related to brain "management" networks where the teacher reinforces the educational content by simultaneously using various strategies such as case studies, role-playing, collaborative learning, hands-on activities, field trips, web-based communication, and circular software.
2. **Expression:** The objective behind this approach is to give pupils a variety of platforms through which to communicate their thoughts and understanding. This promotes diversity in the classroom by giving students different ways to demonstrate what they have learned. It also creates connections to "strategic" networks by allowing students to present their learning in a variety of ways rather than just through written assessments, such as through oral and visual presentations.
3. **Engagement:** This principle seeks to stimulate students' motivation in learning by exploring their diverse interests.

The UDL Principles of Learning place a strong emphasis on the learner's mastery of learning in addition to their knowledge and abilities. UDL is not a complete answer to the problem of diversity and individual differences. Instead, it is a way to change curricula ahead of time to meet the needs of students from a wide range of backgrounds and abilities [19]. UDL also has other features, such as a focus on expression and participation flexibility, the availability of different student assessment models, the activation of multimedia platforms, and the improvement of teacher-student interactions [11]. So, UDL's design takes into account each student's unique qualities before they make a mistake or make a complaint. Its main goal now is to keep most students from having problems in the first place [40].

Previous Studies

Morganti [30] investigated the impact of the Inclusive Education (IE) Program implementation on social skills among Malaysians with ASD. A modified 27-item TRIAD Social Abilities Assessment (TSSA) questionnaire was used to solicit feedback from 267 teachers on the social skills of the ASD students who were involved in the study. As a result, people with ASD were found to have poor levels of social skills. However, they were noticeably improving over the course of the year. Since the outcome was still within the linear trend, it is predicted that with more efforts made to the IE Program, the growth will continue in the next few years.

Sakellariou et al [39] investigation by into inclusion, inclusive education, transition, and the development of social skills among Children with special education needs or impairments in the Epirus Region. A comprehensive research of the idea of inclusivity and the procedures that follow the development of social skills has been carried out through the implementation of an educational program with 11 pupils who have diverse developmental difficulties. The findings suggested that schools, society, and educational policy all benefit from adopting a participatory education paradigm.

In their study, Tran et al [42] looked at the implementation of IE for students with ASD in elementary schools, the engagement of families and the community, and the factors that affect IE. Surveys and interviews were incorporated as part of a mixed-methods research strategy. Surveys featured questions with multiple choices on a variety of IE practices. 114 parents of elementary-aged ASD students, 263 teachers, 10 professionals, community leaders, and school administrators were study participants from Hanoi and Ha Giang. The results revealed that some children with ASD did not attend primary school. Teachers and family frequently lacked appropriate support and training when IE was applied for children with ASD, which discouraged their efforts. Participants requested in-depth explanations of IE techniques,

training for teachers and families, and interaction between experts from many fields.

Mukkiri et al [40] investigated the use of inclusive education for students with ASD and the challenges that teachers in schools that accept students with ASD experience. Between November 2018 and February 2019, this survey was conducted in the mainstream (regular) and special schools of Puducherry. The investigator personally contacted the special schools while also contacting the normal schools by phone, e-mail, and ordinary mail. Using a semi-structured preform, data was gathered. 66 schools in total took part in the poll (60 mainstream and 6 special schools). Of the 3,967 students in 60 normal schools, 18 (0.45%) had special needs and 2 (0.05%) had ASD (ASD). 1,844 (85%) of the 2,167 students in the six special schools had CWSN, and 323 (15%) had ASD. Only 14 (23.3%) of the 60 mainstream schools, or 42 instructors, offered special education programs. The majority of special schools reported having behavioral issues. When compared to special schools in Puducherry, the enrollment of children with ASD in ordinary schools is less.

Simón et al [46] investigated how inclusion attitudes and advantages were seen by families of children enrolled in schools where students with ASD attend at various educational levels (from kindergarten to high school). Participating were 323 families of ASD adolescents' peers from various educational levels in 16 normal schools. Through the use of questionnaires, the attitudes, perceived advantages, relationships with the teacher, and relationships with the school were all examined. The findings indicate that all families, but particularly those of children with SEN, have good opinions about the inclusive education of children with ASD. Every family mentioned the advantages of inclusion. Collaboration with the school and teacher satisfaction are correlated with attitudes.

3 Methodology

The researcher used the experimental approach, which enables analyzing the impact of an independent variable (the educational program) on a dependent variable (expressive and receptive language and social communication). The researcher chose one of the designs of the experimental method, which included the design of a control group and an experimental group according to a random selection of the sample children and a pre and post measurement, as follows:

1. The sample children (20) who were selected were randomly distributed into two groups (control and experimental).
2. Verifying the equivalence between the children of the two groups in terms of chronological age, economic and social level, expressive and receptive language, and social communication skills.
3. Subject the experimental group to the independent variable (the educational program) and withheld it from the control group.
4. Conducting a post-measurement for the two groups (control and experimental) to measure the effect resulting from the introduction of the independent variable.
5. After about a month, the experimental group is tested again to see if the educational program is still having an effect and to make sure that the change in the dependent variable (expressive and receptive language and communication skills) is real and not just temporary.

Study Population and Sample

The sample members of this study were selected from Children with autism who receive their therapy at the center first autism in Jeddah within the time period (10/12/2021-10/2/2022). The individuals who meet the following conditions were considered to be the members of this study sample:

First: The child's age should be within the age group (3-16) years.

Second: That the child does not suffer from any disabilities that may affect his response or understanding, such as a hearing disability, and this condition has been verified through the medical reports that were given to these children by the Ministry of Health.

Third: The child's intelligence level must be normal, and this condition has been verified by using the UDL test on the Saudi environment. In addition, the child suffers from a disorder in the expressive and receptive language and social communication according to the results of the receptive language scale after its application to children.

The number of children who met the conditions was twenty children who were randomly divided into two equal groups with ten children in each group. One of the two groups was randomly selected to be an experimental group to receive the educational program prepared for the purposes of this study, and the other was a control group that was not subjected to the educational program. The application of the educational program to the experimental sample took two months, at a rate of ten sessions per month, thus bringing the number of sessions received by each child to 20 sessions.

Study Instrument

Two study instruments were employed to accomplish the objectives of the study:

First: a scale of receptive language skills, expressive language and social communication skills.

The researcher prepared the scale based on the UDL program for children with an ASD. The scale consisted of 34 items arranged sequentially from the easiest to the most difficult tasks that measure receptive language skills with 12 items, expressive language with 10 items, and social communication skills with 11 items. The scale was used as a pre-, post-, and follow-up measurement instrument on the study sample.

Second: The Universal Design for Learning (UDL) program

Using a curriculum-based assessment guide and a skill-tracking system for kids with language delays, the Universal Design for Learning (UDL) is utilized to evaluate participants' skills. It also includes task analyses for a group of abilities required for effective communication and learning from the child's everyday experiences. In order for a child to gain from daily learning, the UDL aims to identify language skills and other abilities that need to be improved. This program also includes a curriculum that can be used as a guide for making individual education plans for kids with autism. Given that the targeted children in this study have ASD, three sub-domains related to basic language and learning skills were selected:

Receptive language: aims to measure the extent to which the child understands the receptive words directed at him or his ability to respond to instructions to do specific things such as holding things, choosing from them, and bringing them.

Expressive language: aims to measure the extent to which the child understands gestures, movements, verbal expressions, and verbal motor expressions.

Social Communication Skills: includes skills that develop the child's ideals in communicating with others, responding to their behavior, and showing interest in them in terms of physical approach, initiating interaction, imitating peers, visual communication with them, and the ability to ask for things from them and join their activities.

Instrument Validity and Reliability

The validity of the scale was verified in two ways:

1. The validity of the content of the scale is determined by presenting it to (10) of the arbitrators and adopting the percentage (80%) as the percentage of acceptance of the agreement between the arbitrators.
2. The discriminatory validity of the scale: by applying it to an experimental sample of (10) children with ASD. The coefficients of the (F) values of the discriminatory validity were (8.64, 9.86 and 12.00), all of which are statistically significant.

Regarding reliability, the internal consistency of the scale was calculated using the internal consistency method according to Cronbach's alpha equation, where the reliability coefficient as a whole was (0.896), and the reliability coefficients for the three dimensions ranged between (0.726-0.862).

Data Analysis

After gathering the data, the mean scores and standard deviations of the pre- and post-test. Using the Eta square, the effect size was found to show how well the UDL-based program helped students with ASD improve receptive language, expressive language, and social communication. The Wilcoxon test and Z-value were also used to show how different two similar samples were.

4 Results and Discussion

Before putting the educational program into place, it was made sure that the control and experimental groups were the same in terms of their ability to understand and use language and communication skills, as shown in Table 1.

Table 1: Pre-Measurement to Test Receptive, Expressive Language, and Social Communication Skills

Dimensions	Group	N	Mean Rank	Sum of Ranks	U	Z	P
Receptive language	Experimental Control	10 10	9.70 11.30	97.00 113.00	42.00	0.609	0.579
Expressive language	Experimental Control	10 10	12.55 8.45	125.50 84.50	29.50	1.564	0.123
Social communication skills	Experimental Control	10 10	10.90 10.10	109.00 101.00	46.00	0.304	0.796
Total	Experimental Control	10 10	10.40 10.60	104.00 106.00	49.00	0.076	0.971

According to Table 1, there are no statistically significant variations in the pre-test mean scores of the children's expressive and receptive language scale and social communication abilities between the experimental and control groups.

In order to answer the first question which states "Are there any statistically significant differences between the mean scores of the control and experimental groups on the expressive and receptive language scale and social communication skills after applying the program in favor of the experimental group?". The results were shown in the following table.

Table 2: Post-Measurement to Test Receptive, Expressive Language, and Social Communication Skills

Dimensions	Group	N	Mean Rank	Sum of Ranks	U	Z	P
Receptive language	Experimental Control	10 10	13.90 7.10	139.00 71.00	16.00	2.574	0.009
Expressive language	Experimental Control	10 10	15.20 5.80	152.00 58.00	3.00	3.570	0.000
Social communication skills	Experimental Control	10 10	15.30 5.70	153.00 57.00	2.00	3.641	0.000
Total	Experimental Control	10 10	15.00 6.00	150.00 60.00	5.00	3.406	0.000

Table 2 shows that there is a statistically significant difference between the mean ranks of the scores of the control and experimental groups on the receptive, expressive language, and social communication skills scale in the post-measurement and the total score in favor of the experimental group. This means that the children in the experimental sample have a high level of understanding and use of language, as well as good social communication skills.

These results mean that the results of children with an ASD in the experimental group improved after applying the study program, compared to children with an ASD in the control group after applying the program. The researcher also considers that the extent of improvement in the mean scores of the children of the experimental group after applying the training program on the expressive and receptive language scales and communication social scale is due to their use of the training program, including techniques of reinforcement and imitation. This has resulted in arousing attention, suspense, and a lack of boredom in the experimental group's children. This result is in agreement with the study of Simon et al [46], where the results showed the effectiveness of a training program in improving the expressive and receptive language of children with ASD.

In order to answer the second question which states "Are there statistically significant differences between the mean scores of the experimental group in the expressive and receptive language and social communication skills before and after applying the program in favor of the post-measurement?". The results are shown in the following table.

Table 3: Pre and Post-Measurement of Experimental Sample

Dimensions	Pre/ Post	N	Mean Rank	Sum of Ranks	Z	P
Receptive language	Negative rank Positive rank Ties Total	1 9 0 10	1.00 6.00	1.00 54.00	2.715	0.007
Expressive language	Negative rank Positive rank Ties Total	1 9 0 10	1.00 6.00	1.00 54.00	2.805	0.005
Social communication skills	Negative rank Positive rank Ties Total	0 10 0 10	0.00 5.50	0.00 55.00	2.818	0.005
Total	Negative rank Positive rank Ties Total	1 9 0 10	1.00 6.00	1.00 54.00	2.705	0.007

According to Table 3, there are statistically significant discrepancies between the experimental group's mean scores in the areas of expressive and receptive language, social communication skills, and the overall score in favor of the dimensional measurement. In the post-measurement, the children in the experimental group showed an improvement in their expressive and receptive language as well as their social communication skills.

The researcher also considers that the extent of improvement in the mean scores of the children of the experimental group after applying the training program on the expressive and receptive language scales and the communication social scale

is due to that attempts to interfere with treatment programs by implementing training or educational methods for the skills of children with ASD are a new means of supplying them with help them learn alternative forms of communication and also help them learn some appropriate behavior patterns. This result is in agreement with the study of Simón et al [46], where the results showed the advantages of a training program for children with ASD.

In order to answer the third question which states "Are there statistically significant differences between the mean scores of the post and follow-up measurements in the expressive and receptive language and social communication skills of the experimental group after a month of applying the program?". The results are shown in the following table.

Table 4: Post and Follow-up Measurement of Experimental Sample

Dimensions	Pre/ Follow	N	Mean Rank	Sum of Ranks	Z	P
Receptive language	Negative rank Positive rank Ties Total	2 0 8 10	1.50 0.00	3.00 0.00	1.342	0.180
Expressive language	Negative rank Positive rank Ties Total	7 2 1 10	4.57 6.50	32.00 13.00	1.166	0.244
Social communication skills	Negative rank Positive rank Ties Total	1 2 7 10	2.00 2.00	2.00 4.00	0.577	0.564
Total	Negative rank Positive rank Ties Total	7 3 0 10	6.00 4.33	42.00 13.00	1.502	0.133

According to Table (4), there are no statistically significant variations in the experimental group's mean scores in the post-test and follow-up assessments. This suggests that the program's effectiveness has persisted over the follow-up period and that there has been no post-program relapse. This outcome can be explained in light of the children's gained social communication abilities, expressive and receptive language skills, and the continued practice of the program's activities, which gave them the ability to cope.

In addition to the continuous evaluation within the session and the homework for each session, which led to the continuation of the training effect after the follow-up period. This indicates the extent of their cooperation and love for learning through this program. Also, the improvement that occurred in the children of the experimental group is due to the foundations used in using certain specifications for the training program hall to avoid child distraction factors such as good sitting for the child, good lighting in the hall, and the hall being free of other educational means and posters. The diversity of educational means and tools used in the program has led to the achievement of the desired goals, including audio-visual aids that lead to the connection point between activity and thought for the child, and lead to providing tangible experiences and opportunities to listen to and imitate the vocabulary of the language.

5 Conclusion

This study lends support to the notion that a UDL-based program can help students with ASD develop their expressive and receptive language skills as well as their social communication abilities. It also suggests that UDL-based programs can be more successful than conventional ones at raising these students' language and social communication proficiency levels. Therefore, in line with the goals of the program, it is advantageous for teachers to improve their students' social and language communication abilities. Children with autism who use a UDL-based curriculum had improved imitation, attention-seeking, suspense, and boredom-reduction skills. The findings of this study demonstrated how a UDL-based curriculum helps autistic kids develop strong language understanding and usage skills as well as effective social communication abilities. The foundations used in using specific specifications for the training program hall to prevent child distraction factors like good seating for the child, good lighting in the hall, and the hall being free of other educational tools and posters can be used to conclude that a UDL-based program fosters a calm, stress-free environment and gives students the chance to support, encourage, and acknowledge one another.

The small size of the groups in this study is a disadvantage because it makes it challenging to generalize the findings. Future research should include some qualitative data, such as interviews, to acquire a greater understanding of how pupils master language and social skills because this study only used quantitative data.

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Recommendations

In view of the findings of the present study, the preceding theoretical framework, and earlier studies, the researcher makes the following recommendations:

1. Working to comprehend autistic children's needs, issues, and challenges, talking about their anxieties and sources of anxiety, and assisting them in managing their life and overcoming challenges.
2. Generalizing the application of the educational program to mental health centers as a therapeutic and educational approach for children with ASD.
3. Preparing rehabilitation programs for children with ASD to improve their expressive and receptive language.
4. Involve children with ASD in recreational programs that help social interaction.
5. Contain children with ASD, and work on early intervention in speech sessions.
6. Organizing education and awareness sessions for parents to encourage them to let their children express themselves and to refrain from berating or blaming them in public, which helps children's personalities grow.

Conflict of interest: The authors declare that there is no conflict regarding the publication of this paper.

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