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Inclusive learning and development practices for children with autism spectrum disorders and the ICT's role

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Abstract

Nowadays, the inclusive orientation of education has promoted the inalienable right of all children, including those with autism spectrum disorders (ASD), to be educated in mainstream schools alongside their typically developing (TD) peers. The autism spectrum includes developmental disorders that appear in early childhood and are characterized by qualitative deficits in social communication and adaptive behavior, impeding academic learning and social-emotional development. The aim of this paper is to study those practices that form the conditions for realizing the functional inclusion of ASD children in the traditional classroom. For this reason, through the literature review of modern foreign language scientific articles, an attempt was made to search and study the most widespread and research-documented intervention procedures and techniques, which develop the readiness skills of ASD children, providing them with quality opportunities for active learning and socialization alongside their TD peers. The results showed that when the earlier targeted educational approaches are used in the inclusive classroom, in a structured and predictable learning environment, taking into account their unique characteristics, interests and assessed educational needs, with the support of adequately trained teachers and an interdisciplinary team, in cooperation with the family, their dynamic involvement in the activities of the school program is facilitated. Furthermore, quality interactions with their TD peers are increased and therefore, the appearance of socially acceptable behaviors is promoted, which contributes to their acceptance by their classmates, laying the foundations for their smooth integration into society.

Keywords: Inclusion; Learning; Children; Autism; ICT; Equality; Cognition

1. Introduction

In recent decades, in the context of social justice and the provision of quality education, it is planned for all children to be educated in a social learning environment without segregation, since this, according to research data, maximizes their cognitive and social development (Gena, 2006; Harrower, & Dunlap, 2001).

This idea, which was established in the USA (1975), was promoted through the two reform legislations for educational equality and excellence for people with disabilities (IDEA, 2004, No Child Left Behind, 2001) (Koegel, Matos-Freden, Lang, & Koegel, 2012; Meindl, Delgado, & Casey, 2020). Under this perspective, the educational policy of many countries is directed towards the co-education of ASD children together with their TD peers (Lynch, 2009). Moreover, UNESCO (2017), underlining the significant role of the learning environment and teaching methodology for the support and achievement of all students, considers inclusion as the process of removing obstacles to their active participation in the educational processes of the classroom (Meindl, Delgado, & Casey, 2020). However, it is not enough to place them in the general class without the use of alternative procedures and techniques of individualized intervention determined on the basis of the characteristics of the disorder and their level of functioning, since they present a complex of serious symptoms, which affect multiple areas of their development (cognitive/social/emotional) and need continuous support (Gena, 2006; Harrower, & Dunlap, 2001), in order to enable equal access to the valuable cognitive resources of the

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school environment, as well as to quality opportunities for academic and social learning and professional development (Beghin, 2021).

In the past, there has been intense debate about whether an inclusive school setting can be effective for children with developmental disorders, prioritizing this option only for those with high-functioning autism, or for school-aged but not preschool-aged ASD children (Stahmer, & Ingersoll, 2004). However, nowadays, there is a dramatic increase in the prevalence of the disorder, worldwide, while, at the same time, the percentage of these children who choose to study in mainstream schools is constantly increasing (Denning, & Moody, 2013; Meindl, Delgado, & Casey, 2020; Williams, Johnson, & Sukhodolsky, 2005).

The aim of this paper is to analyze early intervention techniques and educational procedures, which, combined with the systematic observation and evaluation of ASD children, constitute "best practices", as they contribute to the acquisition of the necessary knowledge and skills, facilitating their functional access to the common curriculum of the inclusive classroom and are based on the ability to properly assess and identify their needs, interests and capabilities and on clearly defined learning and development goals (Guldborg, 2010). Moreover, it attempts to make it clear that the success of any educational approach, which is a collective process, presupposes the adequate training of teachers for a deeper understanding of the complex characteristics of ASD, and how they affect learning, the effective use of flexible individualized educational practices and the formation of a supportive quality learning environment, adapted to the unique personality of each ASD child (Denning, & Moody, 2013; Guldborg, 2010).

2. Characteristics of ASD children

Autism spectrum disorder is the most common developmental disorder that occurs early in a child's life, causing brain dysfunction and is characterized by the coexistence of stereotyped repetitive behaviors, interests and activities, together with difficulties in social communication, which act as barriers to their learning (Leblanc, Richardson, & Burns, 2009; Lindsay, Proulx, Scott, & Thomson, 2014).

In some areas of their development a similar sequence to typical development is observed, while in others the normal order of some stages may change or even disappear altogether, which is reflected in their high level of functioning in certain skill areas and in the deficient presence or their complete absence in other areas (Guldborg, 2010). Due to their cognitive rigidity, they show a weakness in understanding the educational material and a slow pace in processing information and instructions. In addition, the dysfunction of executive skills hinders time management, the understanding of the requested tasks, even simple ones, and their completion, due to their problems in planning, organizing and sequencing information, the functioning of working memory, their difficulty to shift their focus of attention, switch to a new activity, notice and regulate their emotions and behavior appropriately. Moreover, they are characterized by behavioral disorders, which escalate from non-compliance behaviors, to anger outbursts, aggression, to self-injury, disruptive or destructive behavior, which act as barriers to their learning and at the same time make it difficult the classroom management (Denning, & Moody, 2013; Williams, Johnson, & Sukhodolsky, 2005). Thus, the areas of their development that need immediate intervention are:

Spontaneous communication and language, since a large percentage of ASD children are characterized by monotonous speech with a topic of interest, while others, until the age of 5 or 6, from very limited to complete lack of functional verbal communication and possibly problematic articulation. Similar limitations are also observed in non-verbal communication, i.e., gestures, body language and maintaining eye contact, which are elements of joint attention.

Social understanding skills, as they are often unable to recognize others' emotions, understand their perspective, or identify and communicate their own needs and wants to others. In addition, they have difficulty understanding elements of verbal language or interpreting elements of non-verbal communication with the teacher and their classmates, such as the touch of others.

The skills of interacting and playing with their peers, reflected in the repetition of topics and activities, the inability to initiate and maintain meaningful interactions and to wait their turn, since they do not learn through play experiences, while at the same time, they have difficulty following instructions and adapting to new requirements, without clear teaching of rules and skills (Guldborg, 2010; Lindsay, Proulx, Scott, & Thomson, 2014).

However, beyond the common pattern of their developmental limitations, significant individual variation is observed, in the nature and degree of severity of the disorder, in the different level of cognitive functioning, in the special characteristics and comorbidities with other disorders, which form an individualized network of different educational needs for every ASD child. For this reason, they should be treated as separate personalities, in need of an individualized

educational approach that capitalizes on their strengths and interests, having previously carefully assessed their needs and having understood the intentionality of their behavior (Guldberg, 2010).

3. The necessity and conditions of the functional inclusion of ASD children

The multiple difficulties faced by ASD children make them extremely anxious, preventing them from establishing meaningful relationships with their TD classmates, making the task of co-educating them seem like a professional challenge for teachers. Therefore, their functional inclusion requires the incorporation of educational techniques and holistic approaches, aimed at key areas of their development, which can have a positive effect on other areas as well. By acquiring, for example, social skills and improving their ways of communicating - given that some of them do not even have a verbal language - but also by expanding the content of their interests, the manifestation of disruptive behaviors is inhibited (Koegel, Matos-Freden, Lang, & Koegel, 2012).

Additionally, by forming an enriched learning environment with stable routines, quality educational goals and active learning opportunities, together with their TD peers, they are given the opportunity to experience the feeling of their social acceptance, which is the core of their inclusion in the school community (Lindsay, Proulx, Scott, & Thomson, 2014). Thus, they develop a positive self-image, as their academic motivation is strengthened, interacting dynamically, in the same quality learning environment, with their TD classmates, their problem-solving and social communication skills improve, actively participating in every aspect of school life. Alike happens with their adaptive behavior, as through the increase of their commitment and their effort to cope with the demands of group work and cooperative learning, the possibility of their isolation and the manifestation of inappropriate behaviors is removed (Beghin, 2021; Leach, & Duffy, 2009; Lynch, 2009; Meindl, Delgado, & Casey, 2020).

However, such practices are extremely beneficial for all students in an inclusive classroom, as they not only enhance their learning, but at the same time raise their awareness of issues of diversity, which is accepted as the normality of the classroom, helping to remove stereotypes and social exclusion of ASD children and in building positive attitudes towards them (Beghin, 2021; Meindl, Delgado, & Casey, 2020).

On the other hand, teachers, as key contributors to the inclusive education model, need formal training or informal education, appropriate preparation, structured practical experience and support from in-school and out-of-school agencies, which increase their self-perception, having the conviction that they have the necessary knowledge and skills, to support these children, having understood their inherent weaknesses related to the disorder, and the ways it interferes with their learning, but also the differentiation of its symptoms (Beghin, 2021; Koegel, Matos-Freden, Lang, & Koegel, 2012).

All these data consistently direct them to the necessary adjustments of the physical environment and daily practices of the classroom to the assessed educational needs of each child and to the differentiation of the way of providing the common curriculum, removing the limiting factors for their social inclusion and co-education (Guldberg, 2010). In particular, they must ensure and make compensatory use of the necessary resources, offering a multimodal teaching, supported by the provision of visual, auditory and digital media, due to their heterogeneous educational needs and their different learning styles and learning readiness, so that even the children with less language skills, to have access to educational materials and instructions on how to work, creating quality learning opportunities for all children in an inclusive classroom. Also, important factors are ensuring the necessary time to process verbal and written information and complete their tasks, but also continuous positive feedback, with a variety of reinforcers, which strengthens their commitment and motivates them to maintain their effort. Of primary importance, however, is creative planning and flexible educational planning, using, with patience and consistency, differentiated teaching and assessment methods, the effectiveness of which depends on the careful study of the individual file and the personal discussion with ASD children, communicating and sharing information with their family so that the personalized support provided to them is within their "Zone of Imminent Development", building on their existing capabilities and turning them into stable capabilities (Beghin, 2021; Leblanc, Richardson, & Burns, 2009; Lindsay, Proulx, Scott, & Thomson, 2014).

In the direction of a quality inclusion of ASD children, the mediating role of the school psychologists proves to be crucial, in order to guide the teachers regarding the incorporation, in the ordinary classroom environment, of scientifically based teaching, evaluation and intervention techniques - related to the management of disruptions their behaviors, the improvement of their academic performance and the achievement of their social integration - which have been studied in clinical settings and proven to have positive effects on their education and mental wellbeing. In addition, they can model their use, examine the effectiveness of positive and negative reinforcers in modifying their behavior, and design an individualized system of alternative reinforcers for each child (Williams, Johnson, & Sukhodolsky, 2005).

The team effort of the teachers is crucial, in case they wish to actually get to know the ASD children together with the special support staff and the interdisciplinary team of the school, which will provide the guidelines, as well as the health, care and counseling services, for the exact determining their level of functionality in a variety of environments and developing effective action plans (Guldberg, 2010; Leblanc, Richardson, & Burns, 2009; Lindsay, Proulx, Scott, & Thomson, 2014; Lynch, & Irvine, 2009).

Moreover, establishing an open system of communication, sharing information with experts, who identify or revise educational goals and design individualized approaches and encouraging parents to collaborate with the school as they know very well the particular needs of their children, while at the same time, consistently continuing what their children learn in the school environment, they contribute to their knowledge generalization and transfer to new social environments (Guldberg, 2010; Lindsay, Proulx, Scott, & Thomson, 2014; Lynch, & Irvine, 2009; Stahmer, & Ingersoll, 2004).

4. Inclusive educational practices for ASD children

In co-educational learning environments, the social inclusion of ASD children in the traditional classroom is achieved by the application of preventive/supportive/responsive strategies, which work to compensate for their cognitive weaknesses, social-communicative limitations and disruptive behavior. Their philosophy starts from the recognition of the necessity to modify and adapt the learning environment and teaching methods and not to change the ASD child, in order to achieve their complete inclusion, which is strengthened by the supportive behavior, but also the positive attitudes of their teachers and TD classmates (Leach, & Duffy, 2009; Lindsay, Proulx, Scott, & Thomson, 2014).

4.1. Preventive practices

As behavior regulation is linked to positive learning outcomes, it is considered a prerequisite for ASD children to have received an early behavioral intervention, which will facilitate their functional integration into the ordinary classroom, preventing the emergence of academic problems or behavioral outbursts. These include the necessary adaptations, design practices and assessment of environmental impact factors, aiming to create a familiar and safe learning environment with firmly structured routines, preventing the challenges of a noisy, unpredictable and disruptive school environment (Leach, & Duffy, 2009; Meindl, Delgado, & Casey, 2020).

Environmental variables refer to the stimuli that precede and trigger the manifestation of a specific behavior and its upcoming consequences. The procedures for modifying environmental factors minimize the chances of disruptive behaviors, as the teacher can integrate into the learning environment previous stimuli, to which the children had a positive response, or subsequent stimuli of their reaction that caused positive interactions (Gena, 2006) or ignore an inappropriate behavior, the motivation for its maintenance was the teacher's attention (Williams, Johnson, & Sukhodolsky, 2005).

A necessary tool is the process of functional evaluation, which investigates - through interviews with teachers, specialist professionals and parents or self-reports of the children themselves - what precedes and what follows of a challenging behavior and contributes to its maintenance. Next, with the assistance of the school psychologist, is the direct observation of the child's behavior, in the natural environment of the classroom, and the analysis, to understand how environmental stimuli maintain a behavior, examining whether their modification will cause its weakening. Based on these research data, behavioral techniques are designed, which promote the replacement of their previous behavior with a more acceptable one, expressing their same needs and desires in a different way.

Such interventions must follow the developmental course of social skills and for this reason should escalate from the most discreet to the most targeted or even personalized are the following (Koegel, Matos-Freden, Lang, & Koegel, 2012; Williams, Johnson, & Sukhodolsky, 2005):

The appropriate arrangements of the physical space of the classroom, with the convenient arrangement of objects and placement of educational materials, in order to precisely delimit their working framework, while at the same time minimizing the risk of sensory overstimulation, with the calm tone of speech, the correct lighting, the exclusion of visual and auditory stimuli distractions or even using headphones or earplugs in activities that require high levels of concentration to stay connected to the learning process (Leach, & Duffy, 2009; Williams, Johnson, & Sukhodolsky, 2005).

The planned and consistent provision of opportunities to choose between available rewards, work materials, the sequence of educational activities, the way of completing their tasks, distributed evenly in the classroom routine with regular readjustments, according to the re-evaluated needs of the students, with resulting in them responding more

directly to academic requirements and showing a higher commitment to completing their tasks, preventing the appearance of challenging behaviors (Meindl, Delgado, & Casey, 2020).

The use of visual schedules (Bryan & Gast, 2000), which are flexible tools, adapted to their level of functionality and utilize their receptive skills, firmly directing them to more socially acceptable behaviors in the classroom. These are a series of pictures, posted on the classroom notice board or placed on the student's desk, ppt slides, or videos, which are visually represented and clearly inform about the daily activities of the program clock, their time sequence and about the necessary deviations. In this planned way, their independent transition to them is achieved, without the need for constant prompts to start a task, the effective use of teaching time and the uninterrupted maintenance of their interest. In addition, their escalating from the most to the least pleasant activities and also their rotation, strengthens their effort for those that do not belong to their interests. Their progressive gradation from the most passable, linked to their pre-existing knowledge, to increasingly demanding tasks, giving them the necessary time and the presentation of the new educational material, at a slow pace, prevents situations of stress, as it reduces the possibility of incorrect response and correspondingly multiplies their opportunities for success and positive feedback. Furthermore, the provision of organized learning experiences, through a variety of educational techniques, such as teaching in small groups or individually, cooperative learning, peer tutoring, the use of assistive technology, visual or kinesthetic learning, removes the possibility of their fatigue and disconnection from the educational process, but also the risk of disruptive behavior (Denning, & Moody, 2013; Harrower, & Dunlap, 2001; Leach, & Duffy, 2009; Lindsay, Proulx, Scott, & Thomson, 2014; Meindl, Delgado, & Casey, 2020; Williams, Johnson, & Sukhodolsky, 2005).

Social Stories (Gray, 2003) or social script use simple narrative language and refer to issues of social behavior, aiming at their preparation. Through images, digital photos and videos, they increase the understanding of the content and motivate ASD children explaining the acceptable ways of behavior in specific social environments. As children improve their behavior, they are given more flexibility in their social interactions, gradually changing some parameters of the script or reducing the need to strictly adhere to its content (Koegel, Matos-Freden, Lang, & Koegel, 2012; Leach, & Duffy, 2009).

The process of priming before starting a potentially difficult activity, which provides them with the opportunity to experience repeated success and to continue the effort, linking it to the positive reinforcement they receive. The teacher, in a relaxed environment of positive interaction of short individualized pre-teaching sessions, connects the new knowledge to be taught to their previous knowledge, informing them of the requirements of an upcoming educational activity. Through their contact and familiarization with the new educational material, by verbally describing what is expected or by using video-recorded educational material, this process enhances the understanding of the new knowledge, the concentration of their attention on the basic information, multiplying the chances of their active involvement in the educational procedure, correct responses, task completion and effective interaction with their TD peers. Additionally, it may include sessions of modeling, repeating and practicing the expected behavior in order to familiarize them with upcoming activities that they will be asked to participate in in the classroom, play or home. Thus, e.g., they are taught in advance the rules of a game, sharing games, giving positive feedback to their teammates and the appropriate behavior after the game is over (Denning, & Moody, 2013; Harrower, & Dunlap, 2001; Koegel, Matos-Freden, Lang, & Koegel, 2012; Meindl, Delgado, & Casey, 2020).

An equally active process is the provision of constant prompting, due to their difficulty in responding endogenously to the stimuli of the learning environment. By encouraging them, with direct guidance and support, with physical gestures, verbal word, and visual/auditory/tactile stimuli, they are offered a powerful cue that indicates the correct answer or the push needed to acquire an academic skill, to understand how to work and complete, without errors, a task. After continuous successful responses, gradually, the provision of prompts by the teacher weakens, while academic achievement significantly affects their behavioral adjustment. Moreover, the method of "simultaneous prompting", where they are provided with the prompt and the strong element at the same time, brings about, without the need for special effort, the correct response of the student. The teacher can then repeat the question without prompting, in order to assess children's mastery of the new material by looking at their percentage of successful responses (Denning, & Moody, 2013; Harrower, & Dunlap, 2001; Leach, & Duffy, 2009; Meindl, Delgado, & Casey, 2020; Williams, Johnson, & Sukhodolsky, 2005).

Two therapeutic interventions, which reinforce the self-management of ASD children, who are characterized by severe language deficits and focus on the importance of choosing motivations, contributing to the development of language and communication skills, increasing their joint attention and self-esteem, with positive impact on their behavior, are:

The PECS program (Picture Exchange Communication System, Bondy & Frost, 2003) allows children with verbal deficits to communicate by exchanging pictures or cards with symbols, which represent their communication intent. In addition,

ASD children are naturally encouraged, by the teacher, to obtain the desired reinforcer through the exchange of images that depict a specific communicative act. Gradually, the process becomes more complex as more cards are used to form a complete sentence, expressing their intention to communicate, effortlessly improving communication and verbal language skills.

The educational program PRT (Pivotal Response Training, Koegel & Koegel, 2006), where the teacher verbally models the child's main request and prompts the child to try to use it to communicate. Each verbal attempt is immediately and naturally reinforced by the teacher, while the gradual weakening of the prompts promotes the emergence of spontaneous verbal communication. More generally, it is a naturalistic, play-based model that aims to improve core areas of development, which in turn will bring progress in other areas of development (Koegel, Matos-Freden, Lang, & Koegel, 2012; Leach, & Duffy, 2009; Stahmer, & Ingersoll, 2004).

4.2. Supportive strategies

They are the means and resources, such as visual supports, the use of small anxiety-reducing objects, when listening to a story or waiting their turn in a group game, verbal repetition of rules and instructions, clearly defined individualized goals, defined rewards -material or a system of privileges-, the realistic expectations that maximize the prospects of achievement but also the mediation of their TD classmates, which are used in the most appropriate way by the teachers, representing information in flexible ways, capitalizing on their strengths, interests and preferences - through visual/verbal/kinesthetic/modeled presentation of instruction, in order to understand the academic goals and behavioral expectations (Denning, & Moody, 2013; Leach, & Duffy, 2009; Lindsay, Proulx, Scott, & Thomson, 2014):

The provision of systematic, intentional and sufficient learning opportunities in a kinesthetic way, using natural gestures and imitations -which contribute to the development of language and communication skills- to naturalistically represent the teaching content, enhancing their dynamic participation and engagement, but also social interactions in the classroom. Furthermore, frequently asked questions, adapted to their level of learning readiness and role play maximize the understanding of information. Incorporating experiences of daily life and their special interests into educational and recreational activities, enabling them to prioritize a list of preferred objects and activities that qualify as positive reinforcers, promotes their active involvement, reducing developing strategies for avoiding work and escaping from social situations. At the same time, highlighting their strengths and achieving the appreciation of their peers contributes to their social development, minimizing the chances of inappropriate behaviors. This purpose is also served by specific ways of answering, such as writing down words or drawing a picture on the board, the use of their fingers to visually represent a number, the short and repetitive oral answers, given by all students together, to questions of the educational material review. Another technique, which combines more response time and interactive learning, is the use of response cards, where the children answer the question by choosing the corresponding card or write the answer on a blank card. Moreover, integrating the teaching of a skill, which is a priority for ASD children, into the daily routines and activities of the inclusive classroom, combines the educational goals of the common curriculum with their individualized learning goals (Leach, & Duffy, 2009; Lindsay, Proulx, Scott, & Thomson, 2014; Meindl, Delgado, & Casey, 2020; Williams, Johnson, & Sukhodolsky, 2005).

Fixed routines, predictable procedures, the formulation of clear rules and behavioral expectations, but also additional incentives and direct reinforcers, aligned with their preferences, delineate the children's participation behavior in the various activities. More specifically, the school psychologist, with systematic interventions and the adequately trained teaching staff can contribute to the development of targeted social skills, such as starting a conversation, maintaining eye contact, understanding emotions, interpreting social behaviors and solving social problems. These basic skills for ASD children, integrated into the classroom routine, through their teaching and practice in the school environment, are generalized and can be transferred to real everyday life settings. In addition, they are taught to comply with given instructions and rules, to develop strategies, to respond to others' requests, to ask for clarifications, to analyze and redistribute the information received. Also, to decode complex social behaviors into simpler steps, memorize and practice them. Moreover, they are encouraged by the school psychologist to observe the verbal and non-verbal behavior of their TD peers, during educational activities, while learning to distinguish between the appropriate and inappropriate behaviors, to understand their social importance and choose acceptable behavior on their own initiative, developing skills in self-management and self-regulation. Hence, they learn to self-observe and recognize the signs of their anger, setting personal goals of independent task completion and appropriate behavior and choosing the desired rewards for achieving them. Furthermore, their ability to initiate and maintain social interactions, to wait their turn, to ask questions and make social comments, without prompting from an adult serves the same objectives (Gena, 2006; Denning, & Moody, 2013; Harrower, & Dunlap, 2001; Koegel, Matos-Freden, Lang, & Koegel, 2012; Meindl, Delgado, & Casey, 2020; Williams, Johnson, & Sukhodolsky, 2005). Besides, very important is the structured behavioral technique, which breaks

down the desired skills into smaller, more manageable elements, which the teacher teaches in a systematic way, using tangible reinforcements with the display of the appropriate behavior (Stahmer, & Ingersoll, 2004).

The identification and recording of the main concepts of each lesson on a card or paper by the teacher, so that ASD children can focus on them, during the educational procedure. The guided notes, with key points and important details, enable them to fill in some additional details, as they follow the lesson. Additionally, the teacher can incorporate performance rubrics into the body of an assignment and direct students about the academic expectations being formed, but also provide them with relevant examples for their better understanding.

The differentiation of the content of the common curriculum by the teacher, with the guidance of the school psychologist, the determination of individualized teaching and assessment goals, according to their individual learning pace, taking into account their learning profile and learning readiness. In the same context, the technique of "project analysis" is placed, that is, the breakdown of complex tasks into their structural parts, teaching them in a clear modeled way, which makes them understandable, so that they can be assisted in their completion, through detailed instructions and frequent reminders. Thus, a structured learning environment is formed, with understandable activities and multiple quality opportunities for multi-level learning, which focuses on recording the individual progress of each child, compared to their starting point (Denning, & Moody, 2013; Lynch, & Irvine, 2009; Williams, Johnson, & Sukhodolsky, 2005).

The interactive approach to the curriculum content, with experiments, simulations and case studies, facilitates the understanding and deepening of knowledge (Williams, Johnson, & Sukhodolsky, 2005).

The use of graphic organizers, where the verbal instructions are represented by visual means, tables, diagrams, mind maps, for their organization and better processing, highlighting and understanding the connections between them, facilitating their recall and the identification of the main concepts. They can also use other visual digital tools to organize their ideas into smaller units, in the form of scaffolding, which facilitates the understanding of new concepts, so that they gradually acquire skills to complete their tasks independently (Denning, & Moody, 2013; Leach, & Duffy, 2009).

The choice of differentiated assessment methods allows ASD children to express the gained knowledge, in the ways they wish, such as drawing, ppt. presentation, role play, visual storytelling, through a series of pictures, visual map, a poem or a written text. All these flexible ways are tailored to their strengths and unique interests and act as powerful incentives to complete their tasks (Denning, & Moody, 2013; Leach, & Duffy, 2009).

The Tic Tac Toe boards are a method of differentiated teaching and assessment, which include a wide range of tasks, placed, with the logic of the trill, by the teacher in nine cells, graded from the simplest to the most complex and enable of free expression for ASD children, so that by choosing the desired tasks and activities, they can complete them and achieve positive assessment results (Denning, & Moody, 2013).

The educational approach of peer tutoring is a high-interaction technique, where TD students support the learning of their ASD peers, without the close supervision of the teacher. They prove to be particularly effective, as they facilitate learners to generalize and retain newly acquired knowledge. Peer mediation procedures consist of: a. cooperative learning groups of academic subjects -reading, comprehension and spelling skills- b. social skills development groups, under the discretionary supervision of the teacher c. free play programs -where they have the opportunity to transfer the skills they have acquired in structured environments, giving them the option of choosing an interesting game where they take a leading role-and d. buddy programs - where a ASD student works in an interactive dyad with another student, who is older chronologically or intellectually, providing support in lessons, play skills and developing friendships- (Guldberg, 2010; Lindsay, Proulx, Scott, & Thomson, 2014). These monitorial teaching methods must fit into the wider context of daily collaboration of all students in the classroom in common educational activities, promoting reflective processes and high quality and quantity interactions, through modeling practices and providing prompts and reinforcers (Gena, 2006; Harrower, & Dunlap, 2001; Williams, Johnson, & Sukhodolsky, 2005).

4.3. Response interventions

They include specific techniques and procedures, with the aim of redirecting inappropriate behavior, utilizing differential approaches to reinforcing behavior, where the inappropriate behavior of ASD children is essentially ignored (Leach, & Duffy, 2009). In particular, differential reinforcement of non-conventional behavior (DRI) is a behavioral intervention that aims to remove an unwanted behavior by ignoring it and positively reinforcing socially acceptable behavior:

Differential reinforcement of behavioral communication (DRC), in which positive reinforcement depends on the appropriate way of communicating a need or desire to them, through a replacement behavior for the challenging one, which will be established through systematic practice (Koegel, Matos-Freden, Lang, & Koegel, 2012; Leach, & Duffy, 2009).

Differential reinforcement of behavioral zero rates (DRO), where positive reinforcement is linked to the absence of the problem behavior, within a certain time frame.

Differential reinforcement of lower rates of behavior (DRL), where positive reinforcement is associated with the reduction in the frequency of the inappropriate behavior (Leach, & Duffy, 2009).

The management of challenging behavior through its reframing, as a way of communicating their desires and needs, according to the functional approach to communication and teaching, by providing positive reinforcers, socially acceptable ways of communicating the same goals. Consolidation of the desired behavior and its satisfactory display implies the delayed provision of reinforcement (Lynch, & Irvine, 2009; Williams, Johnson, & Sukhodolsky, 2005).

5. Inhibiting factors in the functional inclusion of ASD children

First of all, an important variable is the lack of theoretical and practical knowledge of general school teachers on special education issues, as well as the transfer to another school unit of teachers who have been trained and work effectively with ASD children in an inclusive classroom. The increasing incidence of the disorder, combined with the correspondingly high percentage of these children who choose to study in non-segregated environments, indicates the need for effective methods of specialized training of active teachers and special educational and support staff, in the intervention approaches that are validated from the new research findings, so that they can solve the multiple problems that arise in the daily practice of the classroom. In addition, there is a lack of adequate funding and an absence from undergraduate curricula of specialized knowledge and structured experiences for ASD and other developmental disorders that require supportive services. At the same time, the training of some teachers is based on their own initiative and financial burden, with a minimal contribution from the state, so that they acquire the appropriate knowledge and skills to utilize the appropriate educational techniques, which will optimize their learning of ASD children.

Another problem focuses on the question of how to evaluate them, to collect reliable and valid data, as a basis for designing an individualized intervention. It is certain that the use of differentiated assessment criteria and the use of reinforcers that will motivate their participation will inhibit the possibility of disruptive behavior in response to their difficulty in responding to a standardized written test, designed for TD children. In the same direction, the teacher should check whether the children have understood the instructions and the vocabulary of the test by asking them to repeat them, before giving the answer. It will also take into account their need for caution, due to their particular nature and the environmental conditions of the assessment. Therefore, the systematic collection of information, from interviews of parents and teachers, the use of standardized assessment tools, the continuous observation and recording of their behavior, in various social environments is required.

One more factor that undermines the success of effective co-education is the fact that teachers turn to simplest interventions, which can be implemented with the available material and human resources of the school, without choosing the research-based ones, which are clearly more demanding, but also proven more effective.

6. The Role of ICTs

Last but not least, we emphasize the significance of all digital technologies in the field of education and in Autism training, which is very effective and productive and facilitates and improves the assessment, the intervention, and the educational procedures via mobile devices that bring educational activities anywhere [14-17], various ICTs applications that are the main supporters of education [18-37], and AI, STEM, Games and ROBOTICS that raise educational procedures to new performance levers [38-45]. Additionally, the improvement and blending of ICTs with theories and models of metacognition, mindfulness, meditation, and emotional intelligence cultivation [46-79], accelerates and improves more than educational practices and results, especially in children with Autism, treating domain and its practices like assessment and intervention.

7. Conclusion

From the above, it becomes clear that the inclusion of ASD children in the ordinary classroom, due to the limitations in their cognitive and behavioral functionality, must be supported by "best practices", based on the knowledge and understanding of the way the disorder poses barriers in their learning and the consistent processes of identifying and assessing their individualized needs, so that by targeting the specific areas of development that need early intervention, they can multiply the opportunities to learn together and with the assistance of their TD peers.

Moreover, these inclusive practices must be part of the daily planning and organization of educational process and through the various ways of representing information reinforce understanding, while at the same time through the encouragement of their initiative and free expression, achieve their dynamic involvement, active learning, academic achievement and behavioral adjustment.

In this coherent orientation of the mainstream school, the key role of the sufficiently trained and sensitized teachers is undisputed, because in the context of their continuous professional development, they develop a high self-efficacy perception that they have the abilities to support these children, forming a supportive, safe and motivating learning environment, spreading positive attitudes towards them in the classroom, which are reflected in the educational process, multiplying opportunities for them to experience positive learning experiences and promoting their academic learning and socio-emotional development.

However, it is clear that a collective response to the difficulties of ASD children is required, through the cooperation of school-family-special professionals, where the communication and exchange of information between them aims at the consistent transfer and systematic use of intervention techniques from their familiar environment home in the social environment of the inclusive classroom and vice versa. In particular, school psychologists can contribute to the creation of dynamic networks of co-education of ASD children with their TD classmates, providing them with support, through targeted interventions, guidance and information to teachers and counseling to their parents. Additionally, the two-way cooperation between school and family, with the systematic support of an interdisciplinary team, promotes the process of self-improvement and regulation of their behavior in the school context, but also its long-term maintenance in other social environments.

Finally, the contribution of their TD peers is considered to be of key importance, who, through their acceptance and guidance, on the appropriate ways of cooperation and interaction, facilitate the establishment of meaningful relationships between them, motivating their equal involvement in every educational act and action, contributing to their functional inclusion in the school environment.

Compliance with ethical standards

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Disclosure of conflict of interest

The Authors proclaim no conflict of interest.

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