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The Potential Role of TEACCH and PECS for Secondary Education Students with a Focus on Literacy

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Abstract
This chapter emerges from the ASDigital project and offers innovative insights, from a partnership between the views of a practicioner and scholar knowledge. Focusing on Treatment and Education of Autistic and Related Communication-Hazardous Children (TEACCH) and Picture Exchange Communication System (PECS), the chapter provides practical guidance for professionals in fostering literacy skills in secondary education students with Autism Spectrum Disorder (ASD), with an emphasizes on digital competences. The reflection provided in this study explores how both approaches offer structured, visually supported learning environments, benefiting those with autism or communication diversity who struggle with traditional methods. Therefore, it explores how these visual supports can also extend to digital literacy, facilitating communication, social skills, and familiarity with digital symbols. The chapter's insights, also intend to open avenues for future research, through the generation of empirical data for the further validation of these premises.

Keywords: Autism; TEACCH; PECS; Secondary Education; Literacy.

Introduction

The present work is a chapter developed within the scope of a collaborative project known as ASDigital (2020-1-PT01-KA226-SCH-094961). This chapter tries to go beyond the traditional academic discourse, as it represents the culmination of a unique partnership between a highly experienced Polish teacher specialized in the education of autistic children and youth, and a Portuguese academic.

With a particular emphasis on the critical roles that TEACCH (Treatment and Education of Autistic and Related Communication-Hazardous Children) and PECS (Picture Exchange Communication System) might play in fostering literacy and digital skills among secondary education students with Autism Spectrum Disorder (ASD), the goal of this collaboration is to provide practical and hands-on guidance to professionals in the field. Therefore, this chapter aims to provide helpful insights and efficient solutions that may be quickly adopted in educational settings to enhance the learning and development of autistic people by fusing theoretical knowledge with practical experience.

Treatment and Education of Autistic and related Communication-handicapped Children (TEACCH)

What is TEACCH?

The TEACCH model is a scientifically supported intervention designed for individuals diagnosed with ASD. It prioritizes the implementation of visual aids and personalized instruction to facilitate skill acquisition and foster self-reliance (Mesibov et al., 2014). The intervention was formulated during the 1970s by Eric Schopler and his colleagues at the University of North Carolina. Subsequently, it has gained extensive adoption in educational institutions and clinical environments across the globe (Mesibov et al., 2014).

The TEACCH approach is grounded in the recognition that individuals diagnosed with ASD frequently encounter challenges in areas such as social and communication abilities, sensory processing, and executive functioning. The methodology entails establishing a well-organized and foreseeable educational setting that integrates visual aids, including visual schedules, task strips, and visual boundaries, to facilitate comprehension of expectations and facilitate the navigation of daily routines for individuals

with ASD (Mesibov et al., 2014).

This method also places emphasis on employing personalized instruction to impart skills that hold significance for the individual and capitalize on their unique strengths and interests. The methodology entails the decomposition of tasks into more manageable components and the provision of unambiguous and consistent cues and evaluations to facilitate the acquisition of knowledge and self-sufficiency (Mesibov et al., 2014).

Figure 1 - (a) and (b) TEACCH method support materials

Several research studies have demonstrated the effectiveness of the TEACCH intervention in individuals with ASD. These studies have reported positive outcomes in various domains, including adaptive behavior, communication, and social skills (Mesibov et al., 2014; Wong et al., 2015). In general, the TEACCH approach is a method that is characterized by its structured nature, individualized approach, and reliance on empirical evidence. It has gained significant traction and endorsement in the field of ASD due to its extensive implementation and support from research studies.

TEACCH Effectiveness

There is limited research on the effectiveness of the TEACCH approach specifically for secondary school students with ASD. However, some studies have investigated the use of TEACCH principles in secondary school settings and reported positive outcomes.

For example, a study by Mason et al. (2016) examined the use of TEACCH strategies in a secondary school setting for students with ASD. The study found that the use of visual supports and structured routines helped students to increase their independence and engagement in classroom activities.

Figure 2 - (a) and (b) TEACCH method support materials being used

Similarly, a study by Edelman et al. (2017) investigated the use of TEACCH strategies in a high school setting for students with ASD. The study found that the use of visual schedules and task analysis helped students to improve their academic and behavioral outcomes.

In addition, a systematic review by Wong et al. (2015) on evidence-based practices for individuals with ASD found that TEACCH was effective in improving social and communication skills, adaptive behavior, and academic outcomes across age groups.

While more research is needed to fully understand the effectiveness of TEACCH for secondary school students with ASD, these studies suggest that the use of TEACCH principles, such as visual supports and structured routines, may be beneficial for this population.

TEACCH Implementation

How do secondary school teachers can implement the method in the classroom for students with ASD?

Secondary school teachers can implement the TEACCH approach in their classrooms for students with ASD by following these key strategies:

a) **Establish an organized and predictable learning environment:** Give children with ASD a regular daily plan that is clear and consistent, and use visual schedules and task lists to assist them grasp what is expected of them.

b) **Use visual supports:** To assist kids with ASD in navigating everyday activities and transitions, use visual supports including visual limits, checklists, and pictorial schedules.

c) **Divide things into more manageable steps:** To promote learning and independence, break down difficult tasks into smaller, more manageable steps and offer prompts and comments that are clear,

consistent, and timely.

d) **Individualize instruction:** Give students tailored instruction based on their interests and strengths, and change the amount of support as necessary to ensure success.
e) **Encourage independence:** Teach students with ASD self-care and independent living techniques, and gradually reduce support as they gain self-assurance and competence.
f) **Use positive reinforcement:** To reinforce desired behaviors and boost motivation, use positive reinforcement techniques including compliments, material prizes, and social reinforcement.
g) **Work together with other professionals:** To create a thorough and well-coordinated strategy for supporting students with ASD, work together with other professionals such speech and language therapists, occupational therapists, and behavioral specialists.

In the secondary school setting, the implementation of the TEACCH approach encompasses the establishment of a structured and nurturing educational milieu that is tailored to cater to the unique requirements of every student diagnosed with ASD. Teachers can facilitate the academic success and overall development of students with ASD by employing various strategies. These strategies include the utilization of visual aids, the division of tasks into manageable components, and the encouragement of independent learning.

TEACCH Advantages

One of the key benefits of the TEACCH method is its ability to establish a structured and predictable learning environment for individuals diagnosed with ASD. This intervention has the potential to mitigate anxiety levels and foster cognitive development and self-reliance.

The TEACCH method places a strong emphasis on individualized instruction, tailoring the educational approach to the unique strengths and needs of each student diagnosed with ASD. This can facilitate the advancement of achievement and enhance one's self-worth.

Visual supports play a crucial role in the TEACCH method, encompassing tools such as visual schedules, checklists, and picture cues. This intervention has the potential to facilitate comprehension and facilitate the successful completion of daily routines and tasks for students diagnosed with ASD.

The TEACCH method is specifically designed to foster independence and enhance self-help skills among students with ASD. By implementing this approach, individuals with ASD can cultivate a sense of self-assurance and attain higher levels of accomplishment.

The approach places significant emphasis on a collaborative line when working with individuals diagnosed with ASD. This approach involves active involvement and cooperation among parents, teachers, and other professionals to establish a comprehensive and well-coordinated support plan.

Figure 3 - (a) and (b) TEACCH method support materials

TEACCH Challenges

People who have been diagnosed with ASD can benefit significantly from the use of the TEACCH technique because it makes it possible to create a learning environment that is organized and consistent. This intervention has the ability to reduce feelings of anxiety, as well as to stimulate cognitive growth and independent thinking.

Individualized training is given a significant amount of weight in the TEACCH method, which modifies the instructional strategy to cater to the specific abilities and requirements of each child who has been identified as having ASD. This has the potential to increase a person's sense of self-worth and aid the advancement of their achievements.

Visual supports are an important component of the TEACCH technique. These supports might take the form of visual schedules, checklists, and pictorial signals, among other things. Students who have been diagnosed with ASD may benefit from this intervention since it has the ability to improve their cognition and make it easier for them to successfully complete their daily routines and tasks.

Students can benefit tremendously from the TEACCH technique, which was developed with the express purpose of encouraging independence

and developing self-help abilities. Individuals who have ASD are able to create a sense of self-assurance and achieve higher levels of performance if they use this strategy.

When working with people who have been diagnosed ASD, the TEACCH method lays a considerable emphasis on taking an approach that emphasizes collaboration. This strategy calls for the participation and collaboration of parents, educators, and other relevant professionals in order to develop a support strategy that is both comprehensive and well-coordinated.

Picture Exchange Communication System (PECS)

What is PECS?

The Picture Exchange Communication System (PECS) is a communication intervention that uses pictures to teach functional communication to individuals with developmental disabilities, including ASD (Bondy & Frost, 2001). PECS is designed to teach individuals to initiate communication by exchanging pictures with a communication partner, which can be a teacher, therapist, or peer. The system consists of six phases that gradually increase in complexity, from exchanging single pictures to constructing sentences with picture cards.

Figure 4 - PECS Visual Communication Cards

It was originally developed for use with preschool children with ASD and other related developmental disabilities. These children had not developed useful language and they did not initiate communication with others. Over time, PECS has been used with individuals of many ages and with diverse abilities. PECS is used to provide a child with an alternative way of communicating if they have not yet developed speech. It can also be used to teach a child how to initiate communication with another person. The child first learns to request for highly desirable items and then expands

this for commenting and sentence formulation. The child is taught to make their request by handing an exchange card representing what they want, to an adult who is holding the desired item. PECS is taught in six phases. Some children will master each phase quite quickly, while others may never reach Phase 6.

PECS Effectiveness

Research on the effectiveness of PECS has shown promising results. Several studies have demonstrated that the implementation of PECS has led to improvements in communication skills, social interactions, and behavior in individuals with ASD (Bondy & Frost, 1994; Ganz & Simpson, 2004; Charlop-Christy et al., 2002).

Figure 5 - PECS Visual Communication Cards

A meta-analysis of 27 studies found that PECS was associated with significant improvements in communication outcomes, including increased use of verbal language, use of spontaneous speech, and initiation of communication (Ganz & Simpson, 2004). Another study compared the effectiveness of PECS to traditional speech therapy and found that both interventions were effective in improving communication skills, but PECS was more effective in promoting functional communication (Flippin et al., 2010).

PECS Implementation

How do secondary school teachers can implement the method in the classroom for students with ASD?

a) **Introduce PECS:** Begin by explaining the PECS system to the student with ASD. Emphasize the value of using PECS for communication. Encourage children to choose a picture to express their needs or wants after demonstrating how to utilize the PECS book or board.

b) **Create a book or board in PECS** containing images of objects or activities that the student would want or need to communicate. Images of washroom items, food and beverages, school materials, and leisure activities may be included.
c) **Use PECS in class:** Encourage your students to express themselves throughout class using PECS. For instance, if a kid needs a break, they can let the teacher know by drawing a picture of one.
d) **Encourage the usage of PECS:** When a student effectively communicates using PECS, encourage them. This could take the form of verbal affirmation, a high-five, or a modest incentive like a sticker or a favorite activity.
e) **Expand the PECS system:** As the kid gains confidence utilizing the system, progressively extend it to cover more complicated communication, such asking for help or expressing emotions.
f) **Work together with the student's parents and therapists** to make sure that the PECS system is consistent across various settings and environments and to make sure the student is improving their communication abilities.

Summarizing, when it comes to helping kids with ASD, improve their quality of life and their ability to communicate clearly, using PECS in the classroom can be extremely beneficial.

PECS Advantages

- PECS is a non-verbal mode of communication that offers an alternative means of expressing oneself. This can provide significant benefits for individuals who face difficulties in verbal communication. Moreover, as a systematic and structured approach to communication, it provides individuals with a **clearly defined and reliable method** to express their wants and needs.
- PECS is distinguished by its **simplicity in acquisition**, making it readily available to a wide range of individuals, including those with limited cognitive or motor skills.
- Positive reinforcement plays a crucial role within the framework of the PECS, as it functions as a **motivating factor for promoting communication**. The aforementioned feature proves to be advantageous for individuals who may face challenges when using traditional methods of communication.

PECS Challenges

- **The scope of PECS is limited** as it primarily emphasizes the communication of requests for items or activities. It may not be deemed appropriate for more intricate modes of communication, such as the articulation of emotions or participation in social exchanges.
- Some individuals may struggle to apply the skills and strategies learned through PECS in one setting to other settings (**generalization**). For instance, individuals may exclusively employ PECS within the confines of the educational setting, while refraining from its utilization in domestic or alternative contexts.
- Maintenance of the PECS requires **continuous efforts to update and revise the communication book or board**, thereby ensuring its continued relevance to the specific needs and desires of the individual.

Figure 6 - Example of PECS Communication Boards

Reflections on Literacy

As mentioned in the introduction, the aim of this chapter was also to develop a critical analysis on the roles of TEACCH and PECS in the development of Literacy. As communication support systems, both methods can support learning processes, with the emergence of differentiated connections to the development of literacy.

TEACCH facilitates the development of familiarity with written language and the establishment of associations between symbols and their respective meanings through the consistent utilization of visual supports. The aforementioned organization has the potential to make a significant impact on the advancement of foundational literacy abilities, including the recognition of letters and the identification of words.

On the contrary, PECS is a specialized method of communication that aims to support individuals who have diverse or no verbal language capabilities. The process entails utilizing a set of visual cards that are exchanged between the individual and a communication partner in order to convey their needs, wants, and thoughts. The primary system lies in the promotion of functional communication. However, it can also have an indirect impact on the development of literacy skills. The utilization of visual symbols facilitates the acquisition of knowledge regarding the representation of objects, actions, and concepts. This comprehension establishes a fundamental basis for subsequent reading comprehension and word decoding, as individuals begin to acknowledge that written words consist of symbols that convey significance.

It is possible to hypothesize that both TEACCH and PECS provide a structured and visually supported learning environment, which can be beneficial for individuals with autism or communication diversity who may have challenges with traditional instructional methods. By incorporating visual supports, these approaches offer opportunities for individuals to engage with and make connections to written language, ultimately supporting the development of literacy skills. Nevertheless, it is very important to clearly establish what is literacy after all, highlighting the perspective of authors like Keefe & Copeland (2011), which goes far beyond reading and writing. For the authors, literacy is a fundamental human right that involves communication, contact, and interaction for all individuals. It is a collective responsibility, involving meaning-making through various communication modes, and can lead to empowerment Keefe & Copeland (2011).

Through a similar framework, but considering now digital literacy, TEACCH and PECS might contribute to its development by leveraging visual supports, fostering communication and social skills, building familiarity with digital symbols, and utilizing digital tools for learning. Nevertheless, and according to Sousa & Costa (2023), empirical data to support the study of media education for children with disabilities is scarce, so this premises need further experiential validation.

Conclusion Remarks and Advice

Specific education needs arise from a unique way of acquiring knowledge and skills during the learning process, which is influenced by an individual's

cognitive-perceptual functioning. It is imperative to acknowledge the distinct requirements and abilities of children and adolescents in order to choose suitable approaches, strategies, and instructional and educational engagements that foster ideal circumstances for cognitive and character growth.

In order to facilitate effective instruction for students diagnosed with ASD, it is imperative to utilize targeted methodologies. In order to foster consistency and predictability within the educational setting, it is imperative to implement a structured daily schedule for school activities. This can be achieved through the clear labelling of classrooms in a manner that is comprehensible to students, providing advance notice of any changes, and explicitly specifying the duration of various activities. In addition, it is imperative to mitigate stress, offer sensory comfort, and employ a regulated mode of communication.

Educators have the ability to facilitate independent work by breaking down tasks into smaller, manageable stages, enhancing intrinsic motivation, implementing a system of rewards, fostering circumstances that promote success, and nurturing peer relationships. Utilizing a diverse range of pedagogical approaches is imperative, encompassing visual, kinaesthetic, imitative, and multimedia modalities.

Ultimately, the establishment of effective collaboration among parents, caregivers, and teachers is of paramount importance in order to provide comprehensive support to the child within and beyond the educational setting.

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