Autism Spectrum Disorder and Social Stories Purpose and Utility

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Authors' contributions

This work was carried out thanks to the close collaboration of all the authors. To be more specific, author VI designed the study and wrote the first draft of the manuscript. Author AR processed in depth and discussed all the analyses of the study. Author PN contributed to all the necessary literature searches and made the final editing of this paper. All the three authors have read and approved the final manuscript.

Data Article

ABSTRACT

This paper is a brief overview of the use of Social Stories (SS) as a strategy to support students in attaining communicative skills. More specifically, it presents the general purpose as well as the positive results after integrating story-telling methods into the learning and teaching process for children within the autism spectrum; this is so because they typically manifest serious weaknesses with respect to social and communicative skills. Additionally, this study refers to the beneficial prospects of creating SS through digital media as they arouse children's interest in the subject matter and do reinforce their creativity in developing a variety of life skills. Finally, some enlightening examples of digitally integrated SS are presented within the Greek educational setting especially nowadays in connection with the Covid pandemic. Any educator can actually benefit from reading this paper and, more particularly, those educators who instruct students identified with autism spectrum disorder or any other developmental disability.

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1. INTRODUCTION

Autism spectrum disorder (ASD) defines a neurobiological disorder that significantly impairs reciprocal social relations, verbal and nonverbal communication, and behavior [1]. Even high functioning children with ASD have problems in collaborating and interacting with other children. For example, they may seek to be actively involved with typically developing peers but do so in odd, unusual, and often socially inappropriate ways [2]. On parallel, there are many cases of students who face difficulties in generating and maintaining communication. In these cases, teachers need to apply more structured methods to better attract their interest and thus enhance peer interaction.

An important and innovative intervention technique that takes advantage of visualized material, with a positive impact on students' cognitive, emotional, and social development includes social SS. It is reported that SS can further reinforce and stabilize an effective and encouraging interaction between a student with Autism Spectrum Disorder (ASD) and an education professional and / or a parent [3], [4], [5,6,7]. SS typically comprise two to five sentences which are categorized as follows: a) descriptive, that is including information about the setting, participants and actions, b) directive, containing statements about the appropriate behavioral response; c) perspective, describing the feelings and reactions of other people in the targeted situations; and d) affirmative sentences, providing analogies with similar actions and responses using nonhuman subjects [8], [6]. Such stories are approached as a means of explicitly communicating relevant information about a context, a skill, or a concept in a way totally meaningful for people belonging to the ASD.

SS can be created and presented utilizing either traditional, that is, handmade methods or technological modalities. Traditional social narratives do not need technology to rely on; whereas, digitalized stories involve technology-enhanced instruction such as iPads, computers, or smartphones.

Digital SS (DSS) is a media artifact which combines a narrated audio text with still images to present a story [9]. By constructing a story, students have the chance to activate their internal cognitive mechanisms by external stimuli, touched upon their interests [10].

DSS can also be used by creating a narrated PowerPoint presentation and delivering the social narrative via a device such as an iPad, computer, or Smartboard. Stories can also be scanned and displayed on mobile devices if a child would prefer using a tablet to review the story, and mobile applications are available to provide support in creating DSS [10]. Nowadays, there is a great variety of Digital Stories software such as PhotoStory3, Animoto, ComicLife, StoryBird, Digital Vaults, Voice Thread and Glogster as well as Kerpoof that are capable of producing a story with same images and a text through a technological mediation [11]. Within a different context, Karimi and Lim [12] developed a 3D digital narrative that integrates education, entertainment and social commitment in order to properly and precisely measure children's real time engagement as well as their facial expressions during these storytelling sessions.

This paper presents SS as a means of acquiring and developing social and communicative skills especially in students with ASD or any other developmental disabilities. It analyzes the digital prospects that SS include and finally it provides some interesting paradigms by the use of DSS in Greece.

2. SOCIAL STORIES: GENERAL PURPOSE AND UTILITY

SS may involve certain indisputable advantages related to the particular traits of people with Asperger's Syndrome Disorder [13,14,15]. What renders them virtually indispensable lies in the fact that such SS help education and health professionals, parents and guardians, even therapists, to further understand the viewpoints that people with either ASD or communication and learning disorders have formed. Moreover, they promote self-care skills by teaching them daily routines such as how to clean their teeth or wash their hands or get dressed. They also cultivate social skills given that the students involved are getting more and more accustomed to sharing attitudes or even they are taught how to ask for help, to say 'thank you', or to stop being impolite. Last but not least, academic qualifications and competences through students' academic escalation are another profit arisen by SS.

Having established an effective channel of communication between the aforementioned parties best clarifies and more accurately explains how smoothly students of the previous

categories can adjust to the new demanding linguistic environment. Therefore, any students' anxiety could possibly deescalate given that they are taught to grasp their social surroundings. Of course, this functions after having previously undergone a consistent training, involving appropriate responses to challenging educational tasks, as well as, stimulating social situations; for instance, either a teacher-student interaction or even better peer interaction. Within this framework, SS form a powerful educational tool that can encourage students to express their own ideas and emotions while acknowledging and responding other people's feeling or intentions. Needless to say, of course, that SS need to be carefully designed so as to maintain the lexical load they are predetermined to convey and thus be finally considered productive and efficacious.

With reference to the position occupied by SS in Special Education and Inclusive Education, scientific research so far has proven that they can assist people with ASD and / or other learning and behavioral problems in gaining far better social understanding in terms of their social surrounding and its social norms [16],[17]. Tsai et al. [18] argued that if we can learn social norms and expectations from others in the real world, then it seems likely that we might also do the same while observing fictional characters in a story world.

On the one hand, SS can make them feel safe in a social context and encourage them to collaborate in group activities without fear, while, on the other hand, achieve considerably better learning goals. They, also, provide brief descriptions of a particular situation, event, or an activity, which carry along specific lexico-grammatical items in connection to what children would expect in each situation. In this sense, they pave the way for an appropriate social interaction by paying attention to other student's points of view.

Another equally worth mentioning attribute of SS is that they assist students in facing unexpected changes that might suddenly occur to their daily schedule or the utterly unexpected and possibly distressing events, that is, a teacher's absence, a schedule alteration, or even certain frightening natural phenomena, such as thunderstorms or earthquakes. An equally significant contribution is that SS are tied with the prospect of positive feedback by peers for proper behavior patterns. This positive aspect lies mainly in the premise that social skills can ameliorate

students'/children's mental health as well as their overall quality, in general. Social learning theory eloquently explains the role of observational learning in both modeling and developing different social behaviors and has equally demonstrated that people can gain meaningful social information when collaborating with others, observing them, including mass media representations [19]. Taking into account these traits one could argue that SS foster students' confidence and self-esteem resulting, in this way, in socially accepted behavioral strategies, such as, decision-making upon what to do when they get angry or even how to deal with their obsessions and big fears.

They also represent a less threatening environment compared to an adult's or a peer's one while at the same time they present information in a literal, "semantic" way that can increase a person's understanding of a previously difficult or ambiguous situation. Additionally, they are easy to implement. Both the presentation and the content of SS can be easily conformed to meet the different needs of every single individual and especially of younger students whose needs, abilities and learning opportunities vary a lot.

Furthermore, SS develop sequence skills; for instance, they determine the sequential order within a cluster of activities and empower the "executive function", that is, the ability to plan and organize several activities. By providing concrete information about what could possibly happen in a given situation as well as some typical and fundamental behavioral guidelines, it becomes obvious that SS secure every person's good quality of life and thus they reduce any feelings of intimidation and anxiety. In this case, they can apparently strengthen what is defined as self-emotion aspect.

Therefore, developing and implementing SS within classrooms can really help teachers faster realize how differently a person with ASD (Autism Spectrum Disorder) perceives a same situation. SS exploit every need and ability associated with children's and adolescents' personality by presenting ample and explicit social information and decoding social concepts and situations. They offer useful examples of appropriate and accepted social attitudes and behaviors and direct students towards educational setting based on verbal and visual characteristics which can be reiterated countless times within classrooms. Finally, SS permeate at all levels of

formal and informal education, broadening children's cognitive spectrum and horizons.

3. SOCIAL STORIES DIGITAL PROSPECTS

It is common knowledge among contemporary researchers, however, that creating a social story through digital media arouses children's interest and reinforces their creativity, becoming thus more preoccupied with a subject matter being taught [20,21,22,23]. Intriguingly, Kennedy et al. have investigated that engaging the participants in making up their own SS is far more effective than just passively viewing existing ones [24]. Dorner et al. [25], claim that digital storytelling audiences contrary to conventional ones are considered not only as listeners but also as learners who can interact and co-construct the story. The whole procedure entails planning, writing, editing, receiving feedback from peers, revising, designing storyboards, editing the story elements, and presenting the product to an audience [26]. In this way, digital SS promote a more interactive, motivating and engaging experience. Additionally, they provide a more collaborative and receptive intervention not only for children with ASD, but also for any child who needs intensive support in relation to a certain skill [27].

On the other hand, there are digital challenges for the teacher. SS with the aid of technology has been widely embraced as an appealing form of classroom teaching. In fact, there are an increasing number of teachers who very frequently resort to technology so as to update the learning procedure for their students' benefit. Teaching SS in a digital form involves narratives that are audio-visually transferred with the aid of Information and Communication Technology and can be integrated within the current educational curriculum.

According to Robin [28], "*students who participate in the creation of digital stories may develop enhanced communications skills by learning to organize their ideas, ask questions, express opinions, and construct narratives*" (p. 5). A variety of social opportunities can be offered through narrating to this child within an educational and well trained professional environment whereas in the following stage this child could be exposed to a wider range of social situations including lunch, play, school study, interests and extracurricular activities. In this framework, SS provide adequate information and

explanations for each event based merely on the child's cognitive and social level of individual understanding [29]. Furthermore, dealing with SS reduces the psycho-emotional upheavals of a child whether he/she is educationally and socially adjusted or not [30].

4. PARADIGMS IN GREECE

In Greece, a most enlightening example of integrated digital material is the Teacher's Guide for the development of social and emotional skills, Life Skills and Autonomous Living for Students with Social Disabilities prepared by the Institute of Educational Policy (http://prosvasimo.iep.edu.gr/el/koinonikesistorie s) [31].

In addition, another noteworthy case is presenting SS and Digital Stories (e-stories) in connection with current issues of social reality due to the COVID-19. The ongoing Greek experience refers to relevant examples. More specifically, the Institute of Educational Policy provides an illustrated story in "How to protect ourselves from the corona virus" [32] with emphasis on the quality of life named "Wellbeing". Moreover, the Laboratory of School Psychology of the National and Kapodistrian University of Athens offers digital material with useful instructions focusing onto a transition to the digital classroom. This material is combined with activities to strengthen social and emotional bonds in emergencies, with reference points to students, teachers and school educators, parents and families, as well as school psychologists (http://www.centerschoolpsych.psych.uoa.gr/inde x.php/2020-03-27-17-58-58) [33]. And a translated digital story [34], illustrated with an informative character who explains the current virus situation in simple terminology in order to motivate children to deal with every aspect of the virus reality more efficaciously.

5. CONCLUSION

This paper argues that by addressing SS as an invaluable teaching method successfully integrated into the learning and teaching process, especially for children with ASD, special educators can take advantage of SS and thus contribute to their children acquiring and developing their social and communicative skills. Additionally, this paper intends to analyze the digital possibilities the SS entail and, finally, focuses on some interesting paradigms for the use of DSS in Greece. Such useful amount of

knowledge will certainly make teachers, parents and other school practitioners more willing to further integrate learning methods build upon SS in their teaching methodology. The purpose behind it is to offer as much targeted and effective instructional opportunities to their students with ASD, as possible.

According to Tsai, Lee and Ken [35], children with ASD need to be well trained to understand the perspective of those they are interacting with and to see how their own behaviors affect the other person's social reciprocity interactions. In this effort, SS may play a significant role. Besides when social intervention is combined with reinforcing skill practice and student monitoring, it is likely to increase social interaction and initiations with peers on behalf of the children with ASD [36]. Therefore, individual interventions are mostly preferred and social interaction is established through group activities and team games, not to mention the incessant positive reinforcement with a view securing students' appropriate behavior.

SS represent a challenging approach that can be introduced to students in a calm and comfortable learning environment and be also read with a positive and expressive tone. Teachers and students can harmoniously cooperate so as to solve any arising problem together. Sometimes a student might come across a problem or even feel frustrated. Teachers should always bear in mind that it is through social narratives that they can lay the ground for making students better understand a problem. Under these circumstances, the teacher realizes the problem faster and through various relevant ideas can help students dexterously overcome their problems and feel more comfortable even within different educational and social environments. Finally, SS respond to each student's level of understanding in relation with the focused needs of his or her personality and the level of his or her emotional, cognitive and social development.

In terms of future research, this study could also expand in cases of children with other special educational needs such as children with Attention-Deficit Hyperactivity Disorder. Furthermore, it is a very interesting idea for researchers to investigate whether SS are equally effective when implemented on their own or mainly successful when they take place along with other already valued methodological interventions.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDICES

SOCIAL STORIES about behavioral problems AND SOCIAL SKILLS

1. Social Story (for school-age students)

Social Story was written to organize rules of respect inside and outside the classroom and to enhance communication.

• <u>Descriptive sentence</u>

  − Almost always during the lesson I get up without raising my hand.
  − Sometimes I also interrupt my teacher when she talks.

• <u>Perspective proposal</u>

  − Most children raise their hand to speak during class.
  − This helps them hear what the teacher is saying.

• <u>Guiding proposal.</u>

  − I will try to raise my hand to speak in class.
  − I will try to listen carefully to my teacher in the classroom.

• <u>Affirmative proposal</u>

  − It's a good idea to watch out!

2. Social Story

• <u>Descriptive sentence</u>

  − Sometimes I do not like my role in the game.
  − I often quarrel in the game.

• <u>Perspective proposal</u>

  − My parents advise me to describe what I do not like.
  − My teachers reward me when I say what I prefer in the game.

• <u>Guiding proposal</u>

  − I will try to say what bothers me.
  − I will try to describe what I want.

• <u>Affirmative proposal</u>

  − It is nice to express what I want and to be rewarded!