(REVIEW ARTICLE)

Educating students with autism through ICT during the COVID-19 pandemic

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Abstract

The closure of schools due to the pandemic led to the forced implementation of distance education. For students with autism, this also meant an interruption of the support they were receiving. Parents were asked to provide this support without having the proper training. The interruption of the operation of schools and the transfer of education to the home, also meant a change in the routine of autistic children, an element that caused them an even greater burden.

Keywords: Autism; Pandemic; Students; Education

1. Introduction

In order to limit the spread of the coronavirus disease 2019 (COVID-19), schools have been closed almost all over the world (67-69). This large-scale closure of schools led to disruptions in children's education, socialization and emotional health (Cachón-Zagalaz et al., 2020; Cost et al., 2021) and increased stress among parents and their caregivers (Calvano et al., 2021; Cameron et al., 2020; Thorell et al., 2021). Although most school-aged children were affected by this pandemic, children with autism are likely to have experienced unique challenges and stressors relative to their neurotypical peers. Studies have found that parents of children with autism reported an increase in behavioral problems such as aggression, hyperactivity, hypersensitivity, and worsening communication skills during the pandemic (Colizzi et al., 2020; Mutluer et al., 2020; Nuñez et al. et al., 2021). In addition, emerging evidence has shown that there have been disruptions to school-based special education, speech and language therapy, physical therapy and occupational therapy services, particularly for younger children, due to the pandemic (White et al., 2021). The use of ICT (70-75) and of literature (76-77) during the COVID-19 pandemic was very useful for children with disabilities and especially autism.

2. Problems in the education of students with autism

Autistic children often struggle in formal educational institutions for many reasons (Goodall, 2018; Hodges et al., 2020). They regularly face sensory challenges within the physical school environment (Jones et al., 2020), complex social expectations and interactions (Mamas et al., 2021; Williams et al., 2019), social isolation and bullying (Aubé et al., 2020 ; Maiano et al., 2016), a multitude of transitions (Makin et al., 2017; Nuske et al., 2019), and low expectations resulting in part from the prevalence of a deficit-based model of autism (Biklen, 2020) .

It should also be noted that there is limited attention to their specific needs, strengths and preferences (Makin et al., 2017), including the care of teachers who do not trust their autistic students and do not know how to include them in the classroom (Roberts & Webster, 2022; Robertson et al., 2003). Such challenges often lead to the educational exclusion of autistic students (Brede et al., 2017; Lilley, 2015), as well as an increased incidence of school refusal (Munkhaugen et al., 2017; Ochi et al., 2020) and mental health complications (Crane et al., 2019). For many autistic children, persistent

negative experiences of conventional schooling can be profoundly damaging to their sense of self and well-being (Danker et al., 2019).

An important prerequisite is building and maintaining strong relationships of trust between autistic students and their teachers. Autistic students report having better school experiences when they feel greater school connectedness and a sense of belonging (Anderson, 2020; Hodges et al., 2020), especially when they cultivate deep relationships with their teachers (Makin et al., 2017), the who meet their needs with innovative approaches based on their abilities (Hodges et al., 2020). Brede et al. (2017) found that a trusting student-teacher relationship was found to be the strongest predictor of educational re-engagement for a group of autistic students who had been repeatedly excluded from school.

In the classroom context, caring goes beyond the interpersonal pragmatics of a caring personality and entails a space where teachers are invested in meeting the needs of individual children and where children are able to take responsibility for themselves and their own experience. (Wood, 2015). This relational view of education is particularly important for autistic children, given its attention to need fulfillment (Murray, 2002) and valuing autonomy, interdependence, community, equality, and inclusion (Tichnor-Wagner & Allen, 2016; Wood, 2015).

Most relationships between autistic students and their teachers are qualitatively poorer than those of age-matched non-autistic students or students with intellectual disabilities and are often characterized by less closeness and more conflict (Blacher et al., 2014; Caplan et al., 2016; Robertson et al., 2003). From the teachers' point of view, the challenging or problematic behaviors of autistic children increase the conflict in their relationships. Conversely, an autistic child's ability to engage in expected (i.e., non-autistic) social skills predicts a closer teacher-child relationship (Blacher et al., 2014; Caplan et al., 2016). In other words, the more "autistic" a child acts out in the classroom (eg, externalizing stereotypic behaviors), the more the relationship is defined by conflict rather than care.

3. The effects of school closures on children with autism

Long-term school closures and the sudden shift to virtual learning are thought to have had a disproportionate, adverse impact on children with special needs (Bellomo et al., 2020; Lim et al., 2020; Vouglanis, 2020; Vouglanis & Driga, 2022; 2023; White et al., 2021). A characteristic of autism that may have created unique challenges for these children during the pandemic is a preference for sameness and routines (American Psychiatric Association, 2013). Insistence on sameness can cause anxiety when changes outside of the "typical" routine are abrupt (Wigham et al., 2015). Indeed, studies have shown that disruptions in routine and insistence on similarity were associated with a number of subsequent outcomes, such as increased behavioral outbursts, generalized anxiety and aggression in children with autism, and increased anxiety in their parents (Baribeau et al., 2021; Bearss et al., 2016; Bull et al., 2015; Kanne & Mazurek, 2011; Reese et al., 2005). In the case of the pandemic, parents have reported increased anxiety in their children with autism spectrum disorder due to the changes it has brought about (Colizzi et al., 2020; Alhuzimi, 2021).

Studies conducted so far present a mixed set of experiences. On the one hand, distance learning took place from home, which can be considered a particularly challenging learning environment for many autistic children especially given the associated stressors associated with COVID-19 (Corbett et al., 2021; Toseeb et al., 2020). Autistic children are expected to have struggled even more than non-autistic children as a result of changing expectations and learning environments, untrained and unprepared parents replacing teachers, absence of regular support, less clear teaching, increased provision of undifferentiated curricula and stressful conditions at home. Many autistic children and young people also have co-occurring mental health problems, particularly anxiety and depression (Lai et al., 2019), which are likely to have worsened during the pandemic for a variety of reasons, including discontinuity of care (Oakley et al., 2021).

In addition, many autistic children receive specialist support at school and benefit from close communication and collaboration between families and schools – which were at risk of being disrupted during the pandemic with the sudden shift to distance education. Strong family-school relationships ensure that parents, teachers, and ideally students themselves, share knowledge and expertise to promote the educational outcomes and social-emotional well-being of autistic children (Azad & Mandell, 2016).

For example, in the qualitative study by Latzer et al. (2021), Israeli parents of autistic children, most of whom attended special education, expressed concerns that they did not have the knowledge or resources to meet their children's developmental needs. In a UK-based survey of 339 families of children with special educational needs, most (81%) of whom were autistic, only 40% of parents reported that the level of support provided to help their children's learning by during the pandemic was sufficient (Toseeb et al., 2020). These families reported wanting specialist professional advice from teachers and other school staff on how to support their children's academic and mental health needs, as

well as educational activities that were specifically tailored to their children's needs and consistent with their support plans .

On the other hand, homeschooling, even under such troubling circumstances, could also present some distinct advantages for autistic students (Reicher, 2020). Home environments, after all, offer less opportunity for the sensory and social overload that often mars the autistic experience in formal education (Aubé et al., 2021; Jones et al., 2020; Maiano et al., 2016; Reicher, 2020), which is a frequently cited reason for parents deciding to homeschool their autistic children (O'Hagan et al., 2021). Consistent with this view, some studies have reported that removing many of the daily pressures typically present in school environments has resulted in some autistic children being more relaxed (Asbury et al., 2021; Rogers et al., 2021) and communicative (Mumbardó -Adam et al., 2021) during the COVID-19 lockdown. Multiple parental attention during this time may also have allowed autistic children to make greater progress in their learning than is possible in a larger classroom environment where they receive less intensive individual support (Latzer et al., 2021).

Parents of autistic children found distance learning challenging and did not feel they received adequate support to meet their children's academic and mental health needs (Latzer et al., 2021; Toseeb et al., 2020). However, some aspects of home schooling have been shown to be beneficial. The investment of time by parents, combined with the calmer, less intense, less sensory, and less scheduled home environment, appeared to contribute to a marked uplift in many children's experiences that parallel those of neurotypical children. For example, Ewing & Vu (2021) analyzing public responses on Twitter during the initial phase of the pandemic revealed that parents often promoted the positive effects of learning from home.

Studies examining teachers' perspectives on distance education during COVID-19 have reported stress caused by sudden changes in their working practices, but also their deep concern for their particularly vulnerable students and their willingness to support them (Gudmundsdottir & Hathaway, 2020), with many suggesting that there will be more frequent and more authentic collaborative relationships in the future (Crane et al., 2021).

The study by Azad et al. (2018) on parent-teacher communication showed that neither parents nor teachers wanted to approach the other for greater involvement as well as both felt frustrated by others' perceived lack of confidence in their own experience. In other words, it is possible that teachers felt that parents were the experts who did not need their input and support, and parents felt powerless to ask for more support and input from teachers (Bubb & Jones, 2020).

It's possible that educators are struggling to cope with the pandemic and/or simply didn't know how best to support autistic children remotely. Given that teachers' level of autism knowledge and understanding is a possible explanation for poorer student outcomes (Anderson, 2020; O'Hagan et al., 2021), it is plausible that teachers may simply not know what tangible steps to make to effectively support their autistic students at a distance (Haspel & Lauderdale-Littin, 2020). They may also have relied heavily on autism stereotypes, wrongly assuming that their autistic students were unable, or unwilling, to connect with their teachers and peers during this time. They may also have assumed, albeit incorrectly, that the lockdown would "suit" autistic students, a narrative that was pervasive in all lockdowns, failing to recognize the unique challenges the pandemic posed to their autistic students and their families (Friedman , 2021).

The sensory stress and overload of the classroom and school can be a source of profound distress for many autistic children (Anderson, 2020; Ashburner et al., 2008), and sensory demands are reported as a significant source of stress for autistic students in the classroom (O ' Hagan et al., 2021). Children were freed from the rigid and strictly enforced time structures of formal schooling, which meant that learning could take place more individually to suit each child and their needs and preferences on a particular day. Consequently, children could choose when they needed breaks, choose how to organize their learning over the course of a day and week, adopt a pace that best suited their learning style and capacity for sustained engagement, and gain autonomy in organizing their day to meet their own changing needs.

4. Conclusions

Finally, it's critical to emphasize how beneficial and productive digital technologies are for the field of education. The use of these technologies, which include mobile devices (82-86), a range of ICT apps (87-99), AI & STEM ROBOTICS (100-114), and games (115-117), facilitates and improves educational processes including evaluation, intervention, and learning. Additionally, the use of ICTs along with theories and models of metacognition, mindfulness, meditation, and the development of emotional intelligence [118-152], along with environmental factors and nutrition [78-81], accelerates and improves educational practices and outcomes, especially for autistic students.

More specifically the COVID-19 pandemic has led to stay-at-home and school closures that have posed significant and unique challenges for families of people with neurodevelopmental disorders. There is limited research on how children on the autism spectrum and their families cope with life crises or major disruptions, and prior to COVID-19, there was no research assessing how individuals on the autism spectrum are affected by pandemics. Pandemics are unique in that they require separation, isolation, and quarantine that result in disruptions to family and social patterns and routines. The unpredictable and uncertain events and changes that have occurred as a result of the COVID-19 pandemic may present specific challenges for children on the autism spectrum, but significant benefits can also arise.

Compliance with ethical standards

Disclosure of conflict of interest

The Authors proclaim no conflict of interest.

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