

DOI: <https://doi.org/10.59595/ajie.10.2.3>

Tutoring Students with Autism in Online Mode during the Pandemic: Survey on Special Educators of Kolkata and its vicinity

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(Received 28 June 2022, Final revised version received 1 November 2022)

The study aims to explore the teaching milieu through the lens of special educators during the pandemic when students with autism shifted to online mode in special schools. This survey was done on 100 special educators from in and around Kolkata City (West Bengal, Eastern part of India). Graphical univariate exploratory data analysis is used to interpret the results. The results reveal the challenges (viz., from the behavioral problems of students to network issues) and facilitators (viz., software used for the effective Online evaluation or assessment) of the online mode of teaching extensively during the pandemic time. The future directions for the online mode concerning teaching-learning for learners with autism are also suggested.

Keywords: Online Mode of Teaching, Special Educators, Autism, Challengers, Facilitators

Introduction

The repetitive stereotypical behavior, poor social interaction, emotional reciprocity, and sensory issues, are generally the predominant features of autism (DSM-V, 2013) that impact their life and daily activities. There is a high incidence of autism worldwide (Zeidan et al., 2021) and India is a part of the global epidemiology with a high prevalence rate (Arora et al., 2018). Most students with autism are enrolled in special schools rather than mainstream or inclusive schools to avail the additional special supports and benefits the special schools with their special staff can provide.

Hurdles of teaching learners with Autism

A teacher in a classroom must be aware that a person with autism would be a loner (Wing, 1997) and will have problems related to sensory processing (Fazlığlu & Baram, 2008), understanding others' minds, or other associated problems like ADHD or anxiety or depression (Carpenter et al., 2001; Gargaro et al., 2011; Hollocks et al., 2019). In a special school, care is taken to alleviate such problems through continuous support in the form of therapies like multisensory approach, speech therapy, ABA based interventions, TEACHH, etc (Callahan et al., 2010; Cooper et al., 2018; Lacocci & McDonald, 2006). These play a crucial role in the educational process of learners with autism. The individualized educational program (Love et al., 2020) that focuses on the curriculum specially designed for an individual also contributes to their overall growth and development.

Therefore, every special educator renders continuous support and attention to learners with autism but challenges are bound to interfere with or impact the achievement of learning goals due to the unique individual atypicalities of the learners with autism.

Autism and the Pandemic

Due to specific characteristics sometimes, it is difficult to teach a person with autism in a common typical physical class (i.e., brick and wall) in a virtual mode (i.e., online class) as in a distance or remote it becomes more complex. Studies mention that special educators had to reschedule classes and coach parents for teaching and related reinforcement (Espinoza et al., 2020). Hurwitz et al., (2020) in their study revealed that 68% of teacher's ability to help students got worse during the pandemic. The confidence of the special educators was low in terms of providing the students with the required help and or being able to solve their

problems (Stelitano et al., 2021). There are reports of increased behavioral issues along with continuous innovation and adaptation of teaching strategies during the pandemic (Hurwitz et al., 2020).

Purpose of the Study

This study aims to explore the challenges faced by the special educators of Kolkata (an Eastern Indian metropolitan city) and its vicinity and how they adapted and managed to continue with their teaching remotely with the dependence on information and communication technology. India being a developing country with a diverse socio-economic population makes it more widely different in terms of the various environment from where learners hail. Though India is pushing itself towards complete digitalization, it ranks 58th out of the 64 countries in the technological advancement ranking (Getzoff, 2022). This draws the portrait of how challenging online education could be and an expansive study is required for in-depth exploration on the line. It is also observed that most literature concentrates on the challenges and difficulties related to online teaching of people with autism but the benefits of technology are ignored or sometimes overlooked. The present study also aims to explore the benefits of teaching in online mode. Moreover, there is a dearth of studies on special educators catering to people with autism in developing countries and most specifically in India.

The objectives of the study are to find the challenges faced by special educators teaching or catering to people with autism during the COVID-19 pandemic including the benefits of the online mode of teaching-learning.

Methodology

Research Design and Setting

The present survey was conducted between July 2021 and August 2021 in and around Kolkata, India (eastern India) just after the second wave of the COVID-19 pandemic. The study includes 100 teachers teaching learners with autism in a government-registered special school who were taking cloud classes since April' 2020. The participants were selected through purposive sampling. A multiple-choice question interview schedule was used for the survey-based study. The data was analyzed using univariate graphical exploratory data analysis (Komorowski et al., 2016). The study aims to find out from the teachers of students with mild to severe autism about the facilitators and inhibitors of

online learning. All the teachers had prior experience attending conventional classroom lessons.

Sampling and participant recruitment

The participants were selected for the survey using a non-probability purposive sampling strategy. The schools in and around Kolkata (i.e., Kolkata, 24 South and North Parganas, Howrah, Hoogly) were contacted over email. The details of the study (i.e., objectives and inclusion/ exclusion criteria, etc.) were conveyed to the concerned school heads. After receiving consent from them further specific details were provided. Overall, 15 schools were contacted out of which 10 were selected based on appropriateness, agreeableness, and informed consent. The school authorities took the responsibility of disseminating the link for the online web-based survey tool among the teachers for responses. A total of 100 teachers teaching students with autism were included as study participants/ study samples. Very few schools could afford to continue teaching online during the COVID pandemic, hence, a sample of 100 was a sufficient sample size.

Inclusion Criteria

The inclusion criteria were; a) the teacher must be a Rehabilitation Council India (RCI) qualified special educator, b) be employed in a special school located in and around Kolkata, c) had at least 6 months of teaching experience, d) have minimum 5 years of experience to teach students with ASD, e) must be taking classes online for at least 6 months since March 2020, and f) teacher could be of any age and gender and must agree to voluntarily take part in the study.

Measures

A web-based survey tool (google form) was developed by the researchers to collect and store the data. The researchers constructed an exploratory survey questionnaire. To construct the tool several news articles, online discussions and interviews, and opinions of field experts from across the globe were read. The researchers spoke with a few experts, parents, and students to have a generic idea about the situation of teaching-learning to develop and finalize the tools in addition to a thorough review of the literature review. Finally, the tool was constructed comprising the dimensions; i) challenges faced by the students while learning in online mode, ii) network connectivity issues, iii) teaching related Issues, iv) behavior issues, and v) personal problems affecting online teaching.

The survey instrument comprised three parts; *Part I*: Demographics, Personal, and Professional Information Section; *Part II*: Challenges of Online Teaching-Learning of Students with Autism; *Part III*: The Facilitators of Online Teaching-Learning of Students with Autism.

Data Collection Process

The target population of the study was teachers of students with autism from government-registered special schools in and around Kolkata teaching students who reported mild or severe autism spectrum on the autism scale. The teachers taught on campus as well as online mode. For the selection of the schools the following steps were followed:

Step 1: The schools were selected purposively (Etikan & Alkassim, 2016) based on the requirements like conducting regular online classes and could provide the required and possible forms of support to their students during the COVID-19 pandemic.

Step 2: The schools, which provided permission to conduct the survey, were included.

Step 3: The details regarding inclusion criteria and the required number of samples were informed.

Step 4: The link to the web-based survey tool (Google Form) was shared with the school authorities.

Step 5: The schools shared the link with the parents.

Step 6: The informed consent was collected electronically through the forms and data was stored on the server.

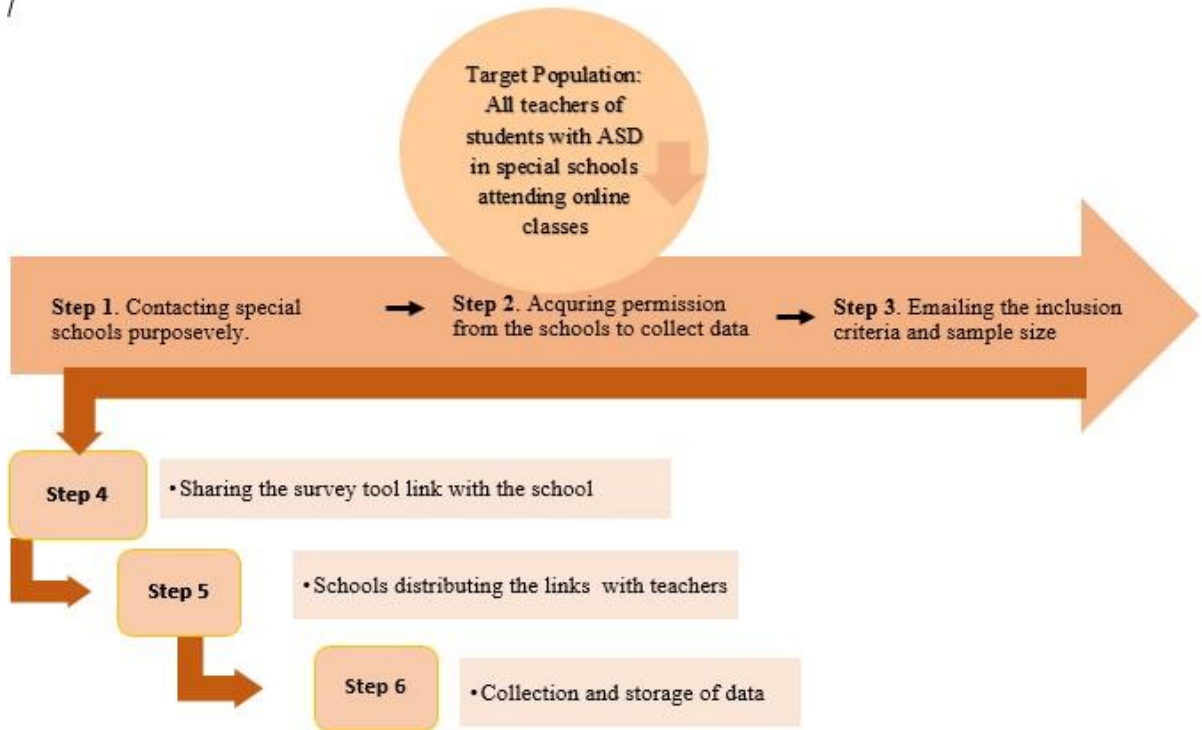


Figure 1. Showing the data collection process of the study

Ethical Considerations

The tool was approved by the Research Advisory Committee (RAC) of the Department of Education, University of Calcutta. The informed consent for data collection was taken from the schools and the teachers individually. The teachers were assured that the data collected would be kept confidential and will be stored in web-based online platform. The participants voluntarily took part in the study.

Data Analysis

The demographic data from the general information schedule has been analyzed by counting total frequencies and presenting them in percentages. For the structured quantitative survey questionnaire, the responses are analyzed using univariate graphical exploratory data analysis. The frequency counting of every response was done using EXCEL and then the graphs were generated.

Results

Section one: Demographics, Personal and Professional Information

Table 1. *Showing Demographics, Personal and Professional Information*

Particulars	Categories	Unit
Gender	Male	11
	Female	89
	Others	0
Age	45>	11
	35>	60
	25>	27
	25 and under	2
Religion	Hinduism	100
	Others	0
Highest Educational Qualification	Above PG	-
	Post-Graduate	38
	Graduate	62
	Secondary	-
Teaching degree/professional qualification	Special B.Ed.	100
	Teachers with Special Training in Autism	10
Years of Experience	1>	5
	5>	39
	10>	56

Section Two: Challenges of Online Learning for Students with Autism

Problems faced by students as perceived by teachers

Students faced several problems during online classes. Findings revealed that 64% of the special educators or teachers sometimes and 25% of teachers always observed that students faced trouble sitting in front of the screen for a long time and only 10% of teachers never observed such an issue. The problem regarding following instructions was observed by 55% of teachers who reported that they sometimes faced problems, 23% reported always facing such challenges, and 20% reported having never faced any problems. The teachers have observed that 67% of students sometimes faced problems in responding to questions, 13% of students always faced problems in responding and only 20% of students never had any problem in responding. 73% of students sometimes faced excessive attention fluctuation issues, 20% of students always faced attention-related problems and just 7% of students never faced the problem. The interaction with the teacher is also troubled online as the results show that 64% sometimes and 15% always had issues.

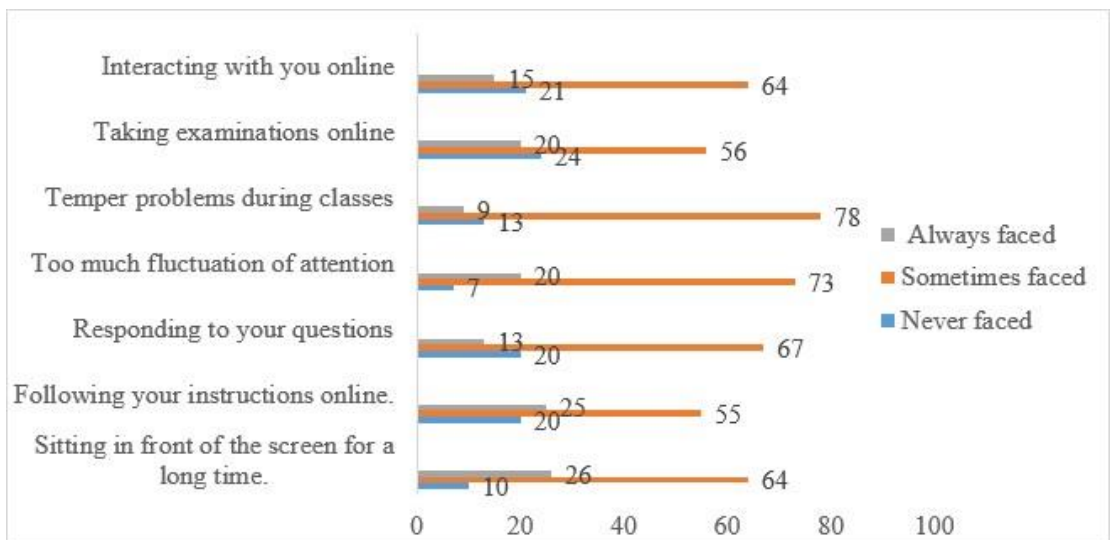


Figure 2: Problems faced by the students as perceived by teachers

Problems faced by teachers related to handling the technology

Difficulties such as using a touch screen (46%), moving a computer mouse (40%), typing on a computer keyboard (26%), and using computer software (57%) were observed in students by teachers respectively. Making eye- contact is sometimes difficult for 62% and always difficult for 21% of students.

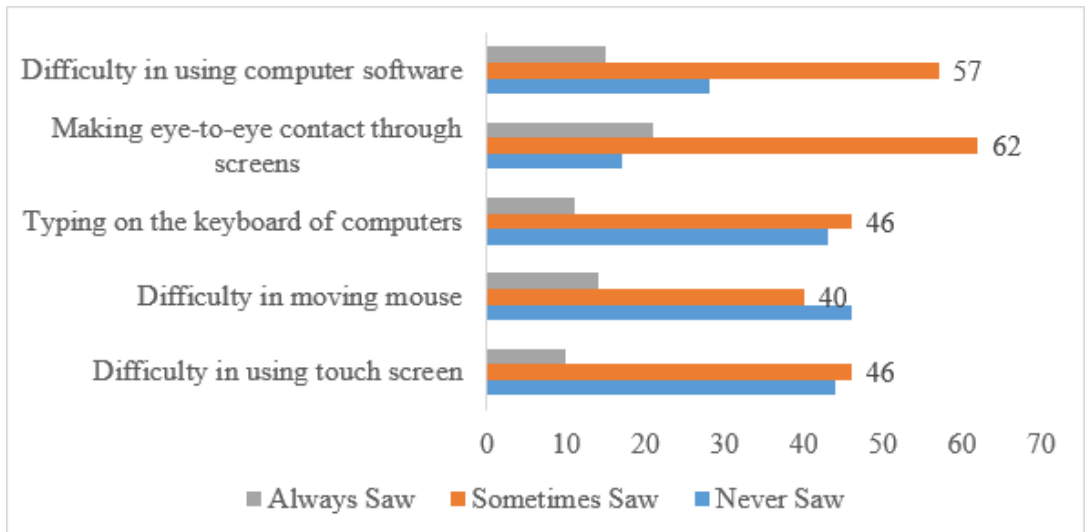


Figure 3. Showing problems related to technological issues faced by the students observed by teachers

Types of network connectivity issues occurred during the online class

Signal and internet speed-related troubles were also observed by most of the participants, but only a few faced these problems frequently.

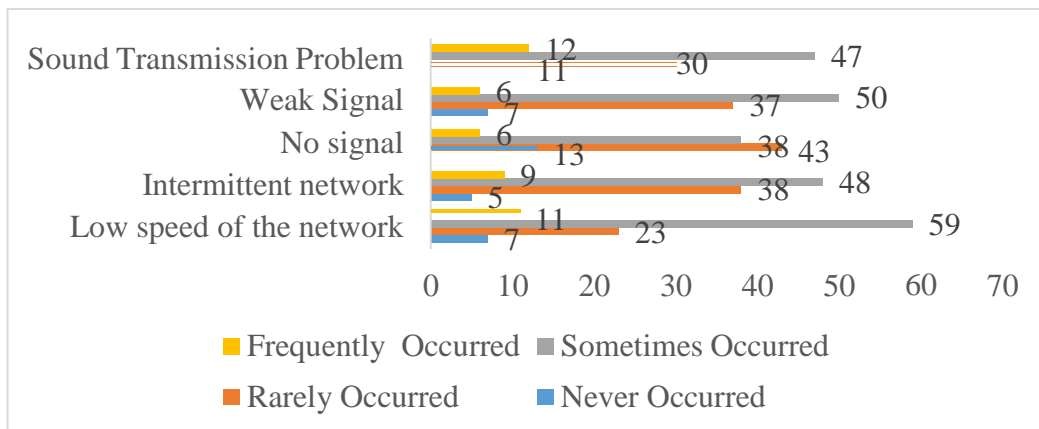


Figure 4. Network problems faced by the teachers

Teaching issues faced during Online classes

Over-involvement of parents in the child's learning was a problem reported by 48% of teachers, followed by a lack of hands-on learning by 45%, and one-to-one attention by 42% of teachers. Interaction issues and the affordability of online classes were also observed in a few.

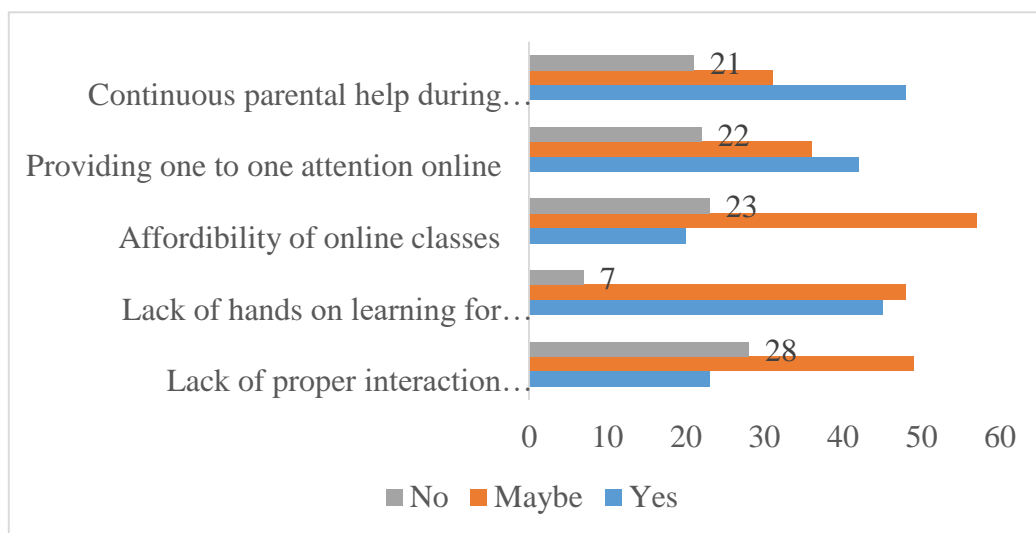


Figure 5. Showing the problems, the teachers faced on the job.

Behaviour challenges of students during online classes

All the teachers reported problems of attention, irritability, and anger issues among students with autism. The presence of behavioral issues was common among students with autism.

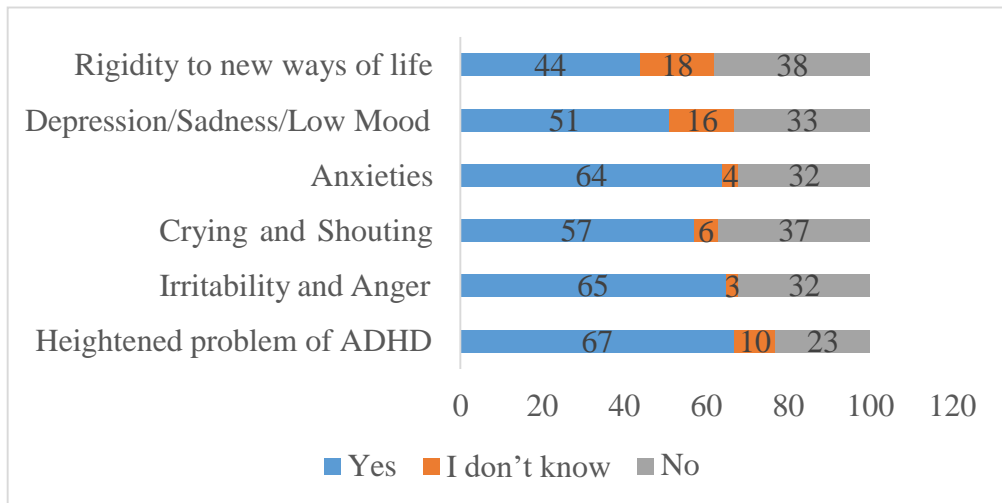


Figure 6. Behavioural problems faced by the students

Personal Problem Affecting Online Teaching

Majority (50%) of participants reported that they lacked technological knowledge, 10% were unsure, and the rest claimed to be proficient. 34% of participants reported that they felt bored during teaching online while 55% did not face any such issues few others were unsure. Arrangement of teaching-learning materials and construction of e-learning materials were a problem for 41% and 38% of participants respectively. A lack of a peaceful environment at home was reported by 30% of teachers. 58% of teachers experienced stress due to the COVID-19 pandemic during the lockdown and 37% of participants claimed to be handling regular chores and jobs simultaneously.

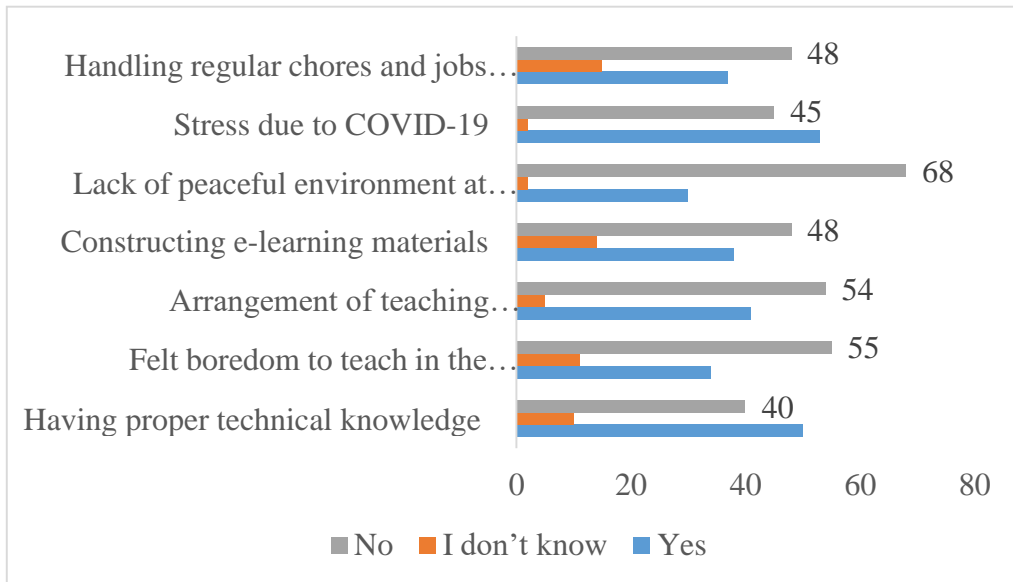


Figure 7. Problems of teachers related to their personal life

Facilitators of Online Teaching-Learning for Students with Autism

Gadgets Used for Online Teaching-Learning

Most teachers frequently used smartphones (75%). Only 1 teacher reported having never used a smartphone to teach. The laptop was the second most widely used device with 19%, 22%, and 12% under categories of frequently used, sometimes used and rarely used respectively. Desktop and tablets were the most highly used devices.

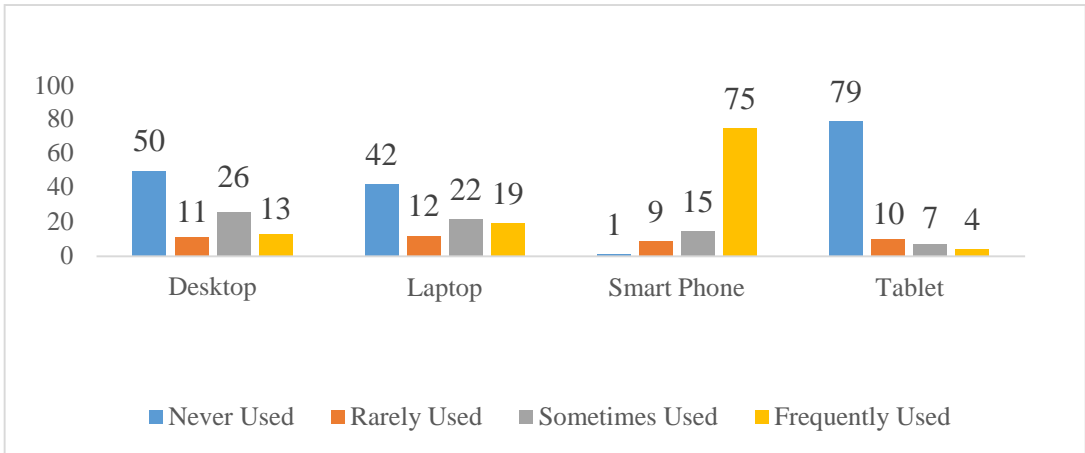


Figure 8. Primary gadgets used by teachers

Other supporting gadgets used in online classes

Most teachers (92%) used headphones, speakers were used by 51% of teachers, pen drives were used by 54% and a Scanner/Printer was not used by 74 teachers, while the use of smartpen and kindle was 1 and 0 respectively.

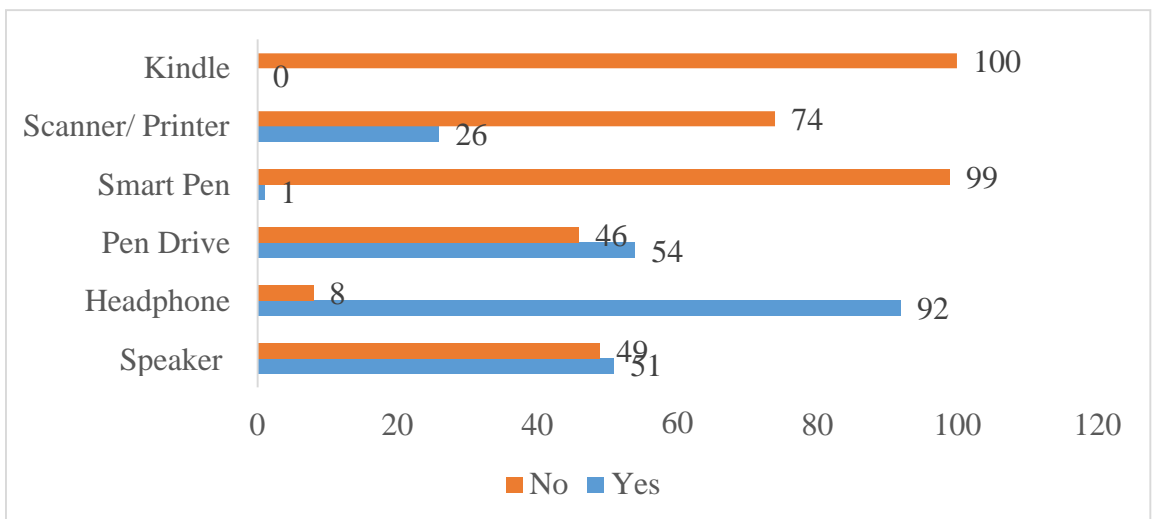


Figure 9. Showing the secondary gadgets used by teachers

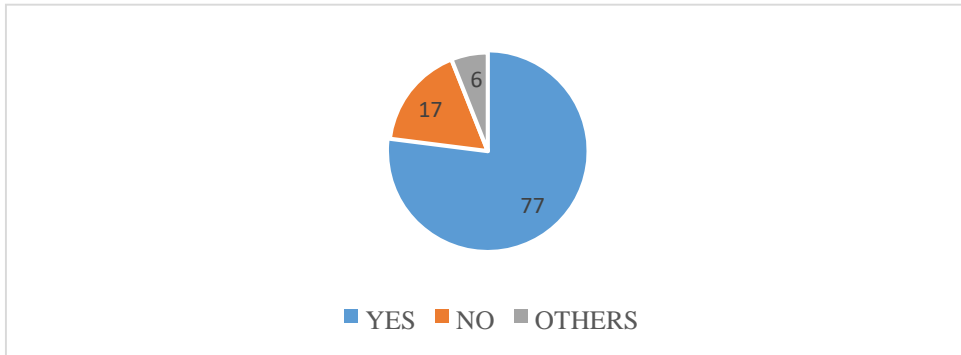


Figure 10. Showing opinion about the autistic-friendly device

77% of Teachers think that autistic-friendly devices would be helpful. 6% used the open-ended option to inform that "can be helpful if made according to individual needs" another teacher has opined "not for all" and similar opinions were reported.

Software used for online teaching-learning

Here, 46% of teachers have said that they use Zoom frequently while 32% of teachers use Google Meet frequently. Undoubtedly 18% and 34% reported having used it sometimes, thereby making these two platforms the most used. WhatsApp was also sometimes used by 88%.

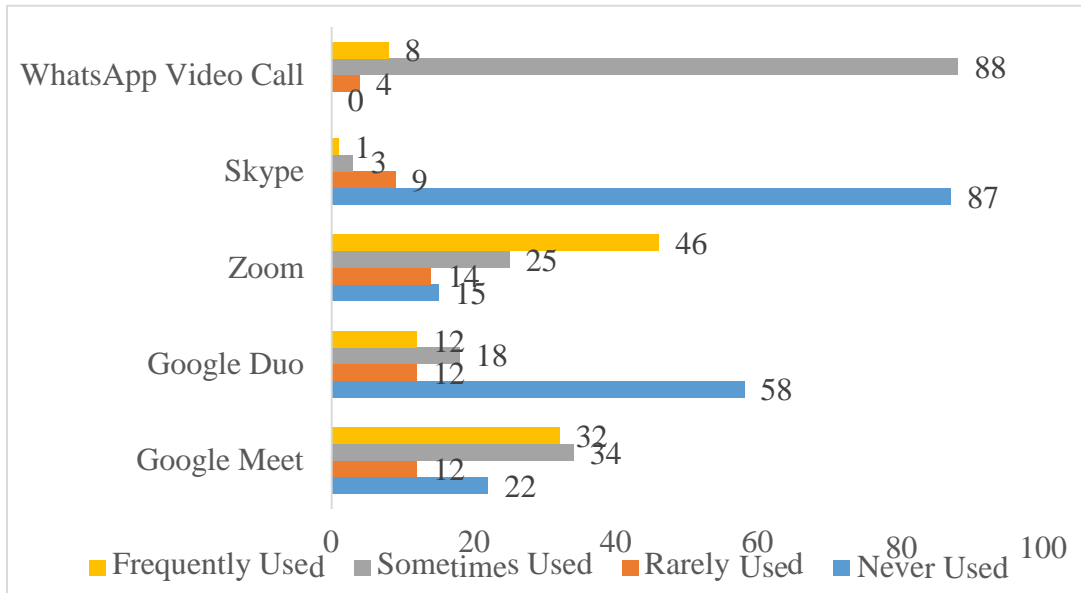


Figure 11. Showing video conferencing software used

Features of the video call app most useful for teaching

The screen sharing feature has been rated as extremely useful by 63% of teachers, sound control feature and video control feature has been rated as extremely useful by 68% in both. 49%, 9%, and 22% of teachers think that the recording feature is extremely, moderately, and somewhat useful respectively. Whiteboard is the least useful with 12% reporting the in-call messages to be not useful while only 23% think it to be extremely useful.

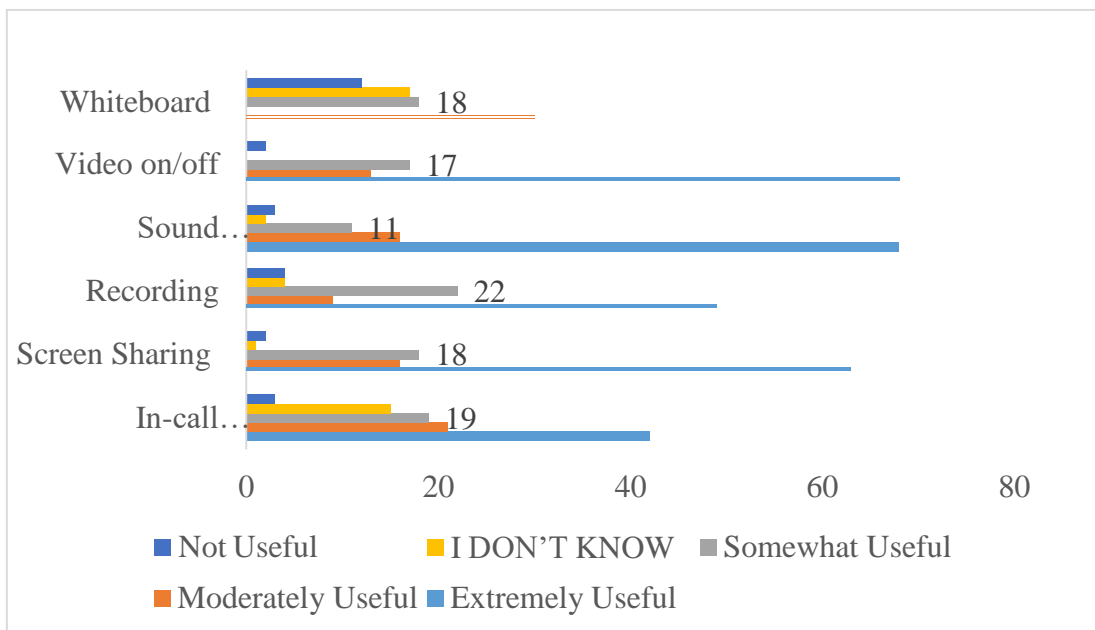


Figure 12. Showing the opinion about the features of online software

Educational apps for Autism in the online store recommended by teachers

Overall, very few teachers have recommended educational apps for students. Only LeelooAAC Autism Speech has been recommended by 56% of teachers. For all other apps around 62% to 87% have not advised.

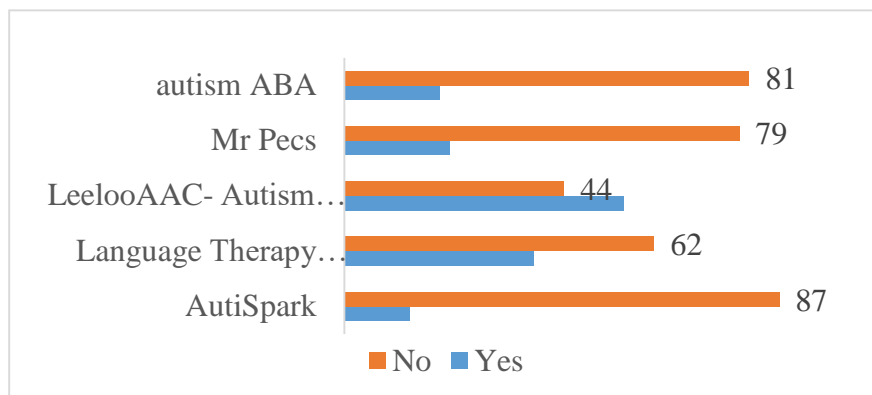


Figure 13. Apps recommended from the web store by teachers

Training and Orientation for Online Tutoring

The webinar has been used by 92% of teachers to update themselves on teaching techniques. Other options have been used widely but 54% of teachers just enrolled in online special educator courses.

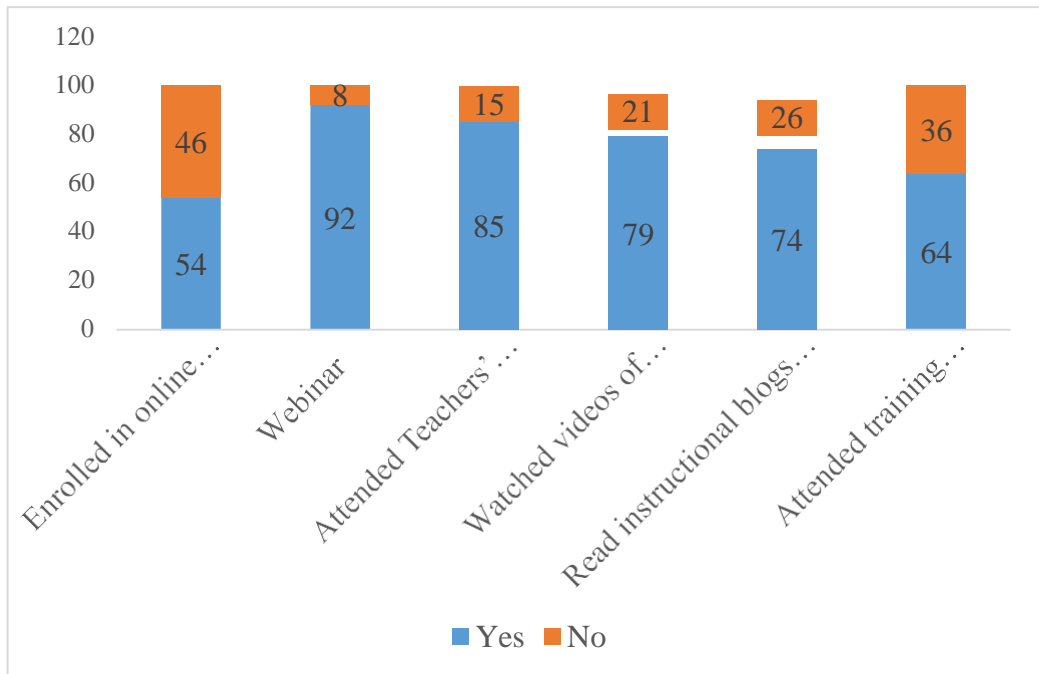


Figure 14. Training opted by teachers to update their online skills

Online Teaching-Learning Resource Materials and Methods

Online worksheets were frequently used by 50% of participants and rarely by 20% of participants. Handmade instructional materials have been frequently used by 67% and rarely by 23% of teachers followed by flash cards (65% frequently and 19 % rarely) and PowerPoint presentations. 72% of teachers mentioned that they have not made any podcasts for the students.

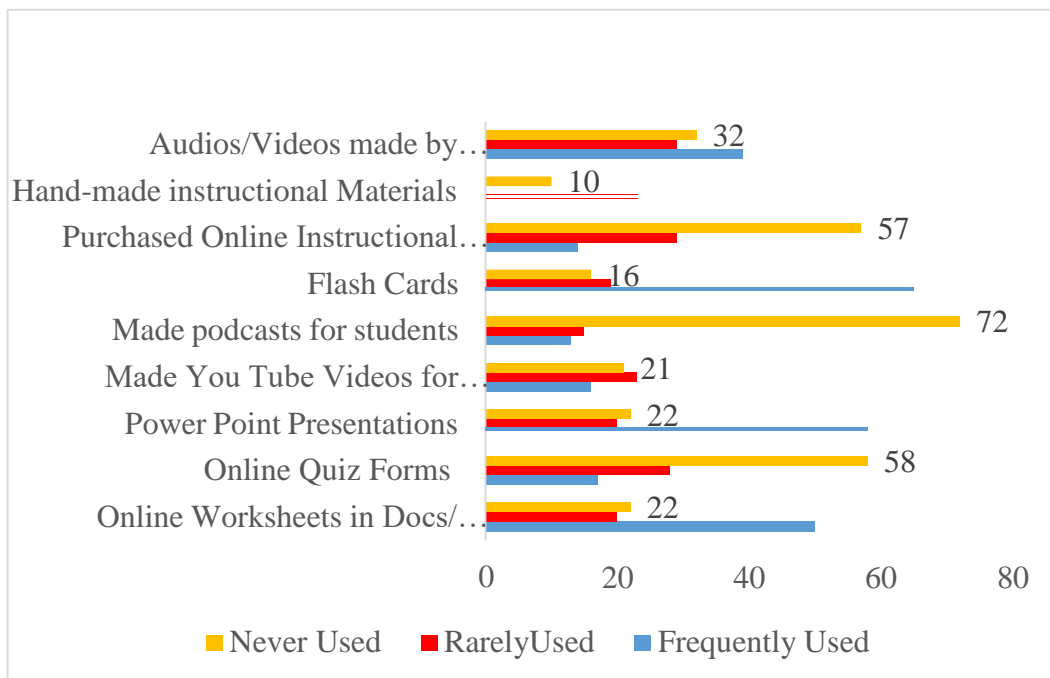


Figure 15. Materials used for teaching-learning

Parents to assist with online home-tutoring methods

All teachers agreed that they have asked parents to assist in teaching; writing, numerical, household skills, life skills, COVID- 19 precautions etc.

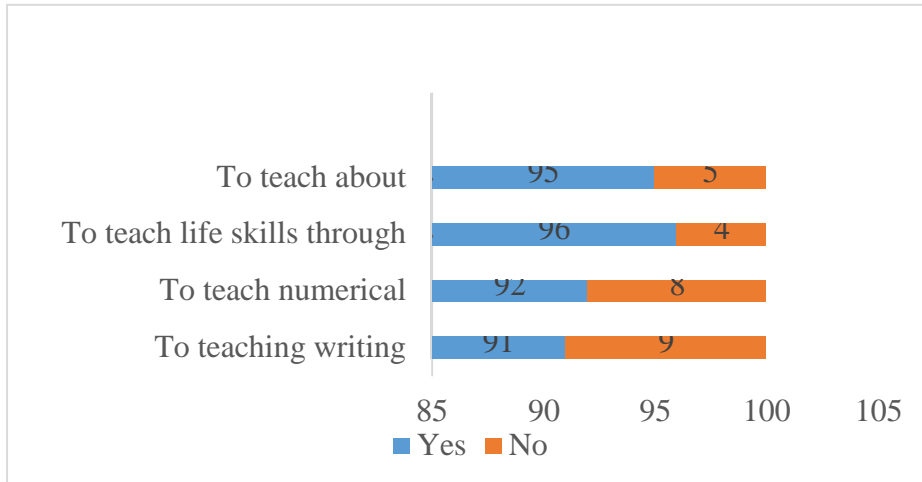


Figure 16. Parents' assistance in online teaching-learning

Online Intervention Strategies/ Methods: Alternative intervention strategies developed for students during online classes

Here, 90% of teachers took online live exercise classes; 92% of teachers guided the parents to provide therapies to their children, and 95% claimed to have engaged in teaching students to protect themselves from COVID. A significant drop was observed in online occupational therapy (74%) and online speech therapy (71%).

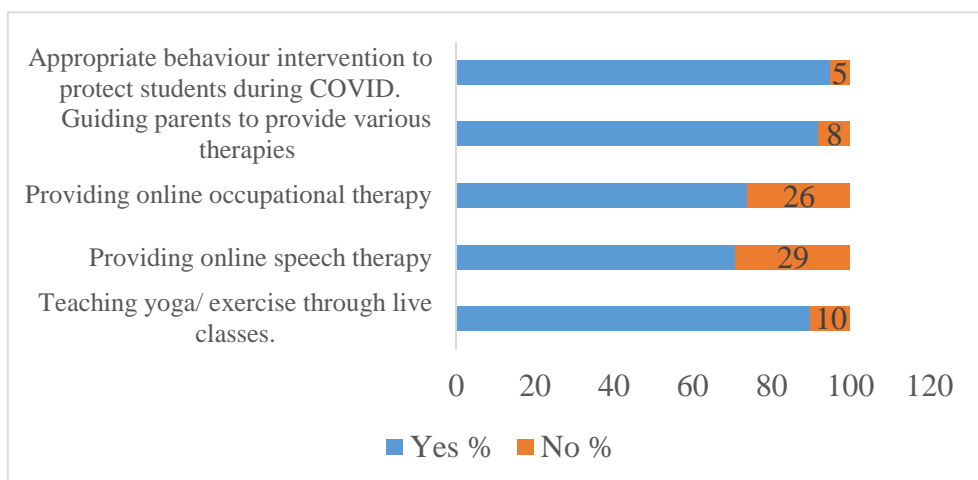


Figure 17. Showing new intervention strategies used by the teachers.

New online method of examination/ evaluation

Online worksheets and video calls between the teacher and student were the two most used methods of examination with frequencies of 92 % and 97% respectively. The other two methods (i.e., online pictures of scripts and online quiz forms) are used by a significant number of teachers.

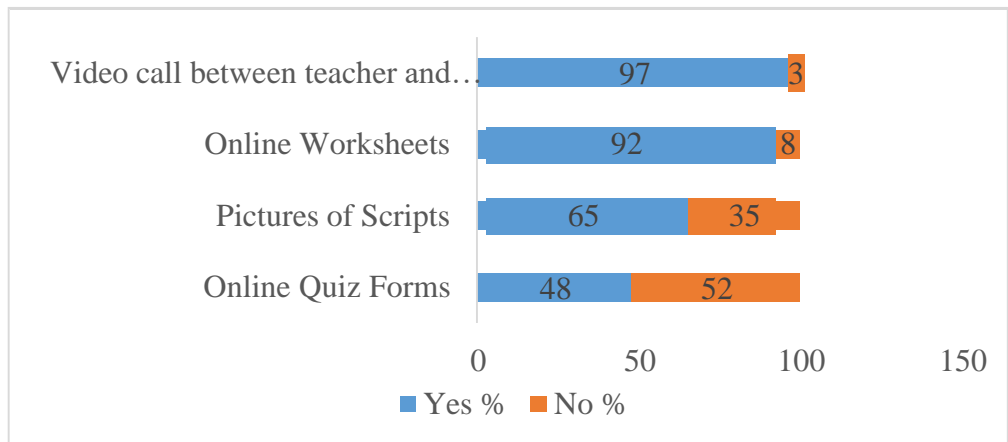


Figure 18. Different online examination methods used by the teachers

Effectiveness of the new online methods as facilitators

The teachers have provided high ratings for the software used, intervention technique, and online examination. Only in the case of teaching-learning materials 21% of teachers rated it as one 9% of teachers rated it as 2 and 11% rated it as 5.

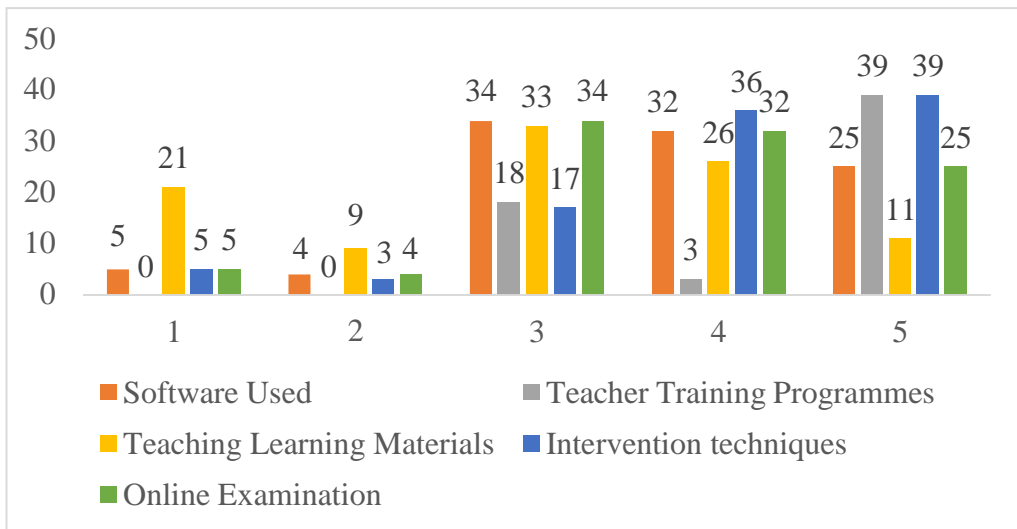


Figure 19. Effectiveness of different facilitators rated by the teachers

Discussion

The crisis of the pandemic was an unprecedented and unique situation for all people born after the period 1940s who had not experienced several natural and man-made disasters (Keefe, 2020). Nevertheless, people took enough steps to accommodate the fallen misery. The schools and other academics tried to find several alternatives to continue imparting lessons and the special schools were no different. The internet technology and its online platforms helped to set up cloud classrooms. The new classrooms have several facilitators and inhibitors which have influenced the entire teaching-learning process of students with autism spectrum disorder.

Facilitators and challenges of the online system

The participants reported long sitting issues as a challenge among the students during online classes, the interaction between the teacher and the student being problematic, and often causing acute fluctuation of attention among students. These problems were always observed earlier in classrooms also but the intensity has increased two-fold (Corbett et al, 2009; Dieckhaus, 2021, Lyons et al, 2011).

Among the technology-related difficulties, the participants informed that the students faced eye-to-eye contact troubles in online mode. Lack of eye-to-eye contact problems has always been one of the major characteristics of autism and online classes have aggravated such issues (Kaur et al., 2022). Network-related issues of the participants were a problem though regularly only a few participants face such problems. It mostly depends on the location of the participant and the internet service provider (Khan & Hasan, 2021).

The excessive involvement of parents in the teaching-learning process is a demerit along with the benefits that the students and the teachers got due to the active association of parents during the pandemic. While training students with autism over prompting and additional help may hinder the actual learning process (Ault & Griffen, 2013; Macduff et al, 2001, Neitzel & Wolery,2009). The lack of hands-on teaching might also interfere with the overall learning process.

Attention problems, anxieties, and irritability are often found in students with ASD. The unpredictable lockdown, home confinement, and the very new online classes turned out to be abstract and vague for the students and the problems related to behavior increased during the online mode.

The teachers also had to bear the stress that was going on across the globe due to COVID-19 (Spain et al., 2021). It was obvious that everyone was worried due to the new circumstances and hence faced various levels stress due to healthcare problems in the family. The other problem that troubled the teachers was arranging fresh innovative teaching-learning material during the lockdown. Moreover, many TLMs were specially ordered by the schools for the students, and when the teachers had to find close substitutes, it turned out to be a tedious task. Lastly, the work-from-home culture also brought in the culture of doing daily household chores along with work, and many teachers have mentioned this as an extra burden on their shoulders.

Facilitators and their impact

The most frequently used electronic gadget used in this medium was a smartphone. This clearly shows that most teachers were comfortable with touch-screen technology (Kobayashi et al., 2011; Razgan et al., 2012). Moreover, it also shows a new trend in mobile learning rather than computer-assisted learning (Andrews et al,2010; Alraheedi & Capretz, 2013). Due to the affordability, practice, and multiple facilities of a smartphone it was used by all teachers regardless of age, economic status, or technological proficiency. 77% of the

participants expect that a customized electronic device would help the students to learn. Though high-functional autistic people can use technology with ease, for others, on the severe scale of the spectrum, a specially designed device could benefit.

To take live classes the samples used google meet or zoom. This shows that these were the most popular platforms in the demographics mostly due to their user-friendly format and facilities provided. Overall, 91% of the participants rated software-dependent learning as 3 or more on a rating point of 5. This means that a maximum number of participants have positive views on software used for the teaching-learning process.

The participants have used mostly webinars to overhaul their standard of teaching online and found it quite useful. Hand-made instructional materials came as a major rescue followed by flashcards and online worksheets to teach. The other innovative techniques which came into existence due to lockdown-induced online teaching were Powerpoint presentations, videos, and audio with instructions and guidance. Earlier studies have already shown the positive impact of video modeling, audio modeling, and ICT on teaching students on the autistic spectrum (Corbet & Abdullah, 2005; Delano, 2007; Keen et al., 2007).

Though 21% of participants have given a very low rating to these innovative techniques implying them to be ineffective, the other hand, most of the participants have given a rating of 3 or more. The reason for the low rating could be a lack of hands-on training materials (Abdel-Salem et al, 2006).

The involvement of parents was found to be a new trend in the teaching-learning process. For all teaching tasks, the parents were asked to help the students. The participants revealed that a large majority of them have asked their parents to teach lessons on functional academics and life skills. This new trend has brought a new element into the teaching-learning process. Earlier it was considered to be a bipolar process between the teacher and the student but now it was between the parent and the student with the teacher as an indirect instructor (Cahapay, 2020).

The new intervention strategies were effective according to the participants and live classes to teach yoga impacted their working with others, though there was a huge difference between a classroom and a personal room.

The parents were taught to provide therapies which was a respite for the students when other service providers were not available in proximity (Latzer et al, 2020).

Parent involvement in the overall academic and training process left a heavy impact and brought a new trend to the special education system (O'Connor, 2021). The examination and evaluation were also conducted online. The evaluation methods most popularly used were video calls between the student and the teacher or online worksheets. Most participants were found to be quite satisfied with the new mode of examination (Li & Wu, 2015).

To sum up, there were several benefits of the online teaching-learning system, and judging the rating of the effectiveness of different elements, this method turns out to be a promising one with great prospects and possibilities. The participants have come up with a mixed view regarding the online system of teaching-learning; neither is inhibited in every step nor all the facilitators are good enough to continue their studies without a frown on their forehead.

Future Directions

The progression of technology is so quick that keeping pace is a tough task. Hence, it could be expected within a decade there would be facilities unimaginable for us in the present. So online teaching-learning might be a good alternative in the future. In case of catastrophes when students or teachers are unable to open the campus physically, online classes could be a good alternative (Hoppe et al., 2008, Anees et al, 2019) also for people with autism. Due to any trouble (health or other personal) if the students are unable to reach the school premises without missing the lessons the teachers can provide the lesson online classes (Thorpe, 1998).

Often a divide is seen between urban and rural areas of a country. In urban areas, the availability of special educators, therapists, and other related experts is higher whereas, in rural areas often there are low numbers of special schools. In such a case special educators can connect with the parents online and provide them with the possible service. There is yet a lot of argument for and against online classes for special students regarding their success rate. Experts show dissatisfaction with the method that is used to impart training nevertheless, it has been efficient and effective enough to continue to teach students. A hybrid or blended method of teaching might bring a balance to the online teaching process where a perfect combination of the benefits from each process could be

taken in the right ratio and according to the need of every student. But before that certain elements must be considered, there should not be a digital divide; secondly, every trainer or educator must be properly skilled to handle technology in the best possible way, and lastly, the parents should be able to provide proper care and support in the home environment.

Limitations

Firstly, the geographical area of the study could have been larger. *Secondly*, the data has been collected from special educators of people with ASD but there are other experts associated with their teaching-learning indirectly, like psychologists, speech and language pathologists, doctors, and even the school administrators like principals, which might reveal many more perspectives and perhaps an overall holistic lens. The perspectives of these people could have enriched the study further.

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