

The Effect of Emergency Remote Teaching on Students with Special Educational Needs and/or Disability during the COVID-19 Pandemic: The Parents' View

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Abstract—The present research examines the way in which Emergency Remote Teaching (ERT) affected students with Special Educational Needs and/or Disability (SEND) during the COVID-19 pandemic. Qualitative descriptive analysis by hand and AI-based/linguistic analysis was performed on the interviews of 12 parents of students with SEND. The results revealed a). how students responded to those special learning conditions, b). how the special educational needs or disabilities of those children affected their attendance on the online courses, and c). how their parents judged the educational dimension of ERT, along with any changes noticed in the psychological and emotional state of their children. Parents highlighted the overall negative impact of ERT on children with SEND.

Index Terms—COVID-19, special educational needs and/or disability (SEND), emergency remote teaching (ERT), inclusive education, linguistic analysis, artificial intelligence

I. INTRODUCTION

The COVID-19 pandemic affected the global Educational System in general. The impact of Emergency Remote Teaching (ERT), being hastily implemented around the world during the COVID-19 pandemic, was significant for all the students [1, 2]. In March 2020, ERT was applied to all levels of education in Greece. In many countries, students were unable to attend ERT courses, due to key deficiencies regarding accessibility, digital equipment and digital skills [2, 3]. Students with Special Educational Needs and/or Disability (SEND) faced additional challenges throughout the ERT implementation. Those students were required to attend the online courses without being supported by their parallel support teacher. Especially, for students with SEND suffering from hearing and vision problems, mobility disorders, communication and learning difficulties, dynamic and inclusive digital learning environments were required [4, 5].

Substantial interventions have been made in many countries to meet the needs of vulnerable students [2, 6]. Meeting the needs of children with SEND requires an accessible enriched digital learning environment and well-designed teaching materials [7, 8].

Although new technologies support learning for children with SEND, during the ERT period in the pandemic, the latter neither enhanced their communication skills, nor did students

acquire greater autonomy [9, 10]. Any efforts made to meet emerging needs during the transition to a digital classroom were spasmodic and partially effective. ERT had also serious psychological consequences due to social interaction loss, exclusion and isolation from friends, absence of interpersonal contacts and lack of play [11, 12]. Studies focusing on the effect of ERT on children reported that their mental health was negatively affected [13, 14]. As children with SEND are even more fragile than their peers, due to the nature of the difficulties they face, it is reported that disruption of their routine and the special educational programs they attended had an even greater negative impact: in some cases, it caused stagnation or even regression of learning and developmental outcomes [15]. School closure posed great challenges on the students, the teachers and the parents in general. Especially for the students with SEND who needed special attention and support [16, 17] there was no provision.

Therefore, the aim of this research is to i) investigate and study the difficulties faced by children with SEND and ii) examine the effectiveness of ERT for those children. The significance of this research lies in the fact that many students with SEND during the ERT period encountered difficulties, which so far have not been sufficiently highlighted. Due to the innovative procedure that was applied, to the authors' knowledge, no similar SEND student data has been collected until now. The data of the current research could be used for future design and development educational policy practices for students with SEND.

II. METHODOLOGY

In the current research, the views of 12 parents of students with SEND were collected through semi-structured interviews. The semi-structured interview was the selected method tool, as it is more flexible than the fully-structured interview and results in rich and authentic data, aiming to reveal the parents' experiences during the ERT process. Interviews took place via Skype, telephone or physical face-to-face meeting with the interviewee. The average duration was 45 minutes. A Modern Greek dataset of qualitative humanistic-linguistic data (consisting of 14.827 words) was created. Data collection took place from June to August 2021, one month after the completion of ERT.

III. PARTICIPANTS

The interviewed parents were by the students' side throughout the ERT implementation. Students were

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attending various educational levels (two in kindergarten, eight in Primary School and two in Secondary School). The target population was children aged from 5 to 14 years old, being diagnosed with SEND and attending ERT online classes in public Kindergartens, Primary and Secondary Schools in Greece during the lockdown period. Nine male and three female parents participated in the research. The seemingly small sample size is justified by the fact that the proposed research concerns only parents of children with SEND, and is mainly qualitative in nature.

Sampling was carried out aiming to cover various special educational needs and disabilities. All the parents were asked to complete and sign a consent form ensuring protection of the personal data of both the interviewees and the children. Gender, age and SEND information of each student is presented in Table I.

TABLE I: CHILDREN'S PROFILES

Code	Gender	Age	SEND
I-1	Male	5	Speech Disorder (stuttering, dysarthria), Physical Disability
I-2	Male	7	General Learning Difficulties (GLD)
I-3	Male	8	Attention Deficit Hyperactivity Disorder (ADHD)
I-4	Male	8	Dyslexia, Developmental Dyscalculia
I-5	Female	9	General Learning Difficulties (GLD)
I-6	Male	13	Dyslexia, Speech Disorder (stuttering)
I-7	Male	5	General Learning Difficulties (GLD)
I-8	Male	10	General Learning Difficulties (GLD)
I-9	Male	11	Attention Deficit Hyperactivity Disorder (ADHD), Aggressiveness
I-10	Male	10	General Learning Difficulties (GLD)
I-11	Female	10	Vision Disability
I-12	Female	14	Attention Deficit Hyperactivity Disorder

IV. DATA PROCESSING

Firstly, interviews were transcribed and edited. The data was then anonymized, so that it would no longer be possible to associate data with the individuals referenced. Data analysis was performed in two ways in order to examine a potential match in the results, as well as to enhance reliability and validity.

A qualitative descriptive, thorough analysis was applied to the data. It was preceded by careful and repeated reading of the interviews, in order to increase familiarity with the data and to highlight the most important points of the parents' views. The study was followed by thematic separation and data coding. The most important issues and topics/domains were manually identified by the handcrafted semantic analysis. The following topics emerged: i) Material and technical conditions, ii) Educational dimension, iii) Psychological and emotional dimension and iv) Suggestions for ERT improvement for students with SEND. All the responses were organized, classified, and grouped based on these topics. After the semantic analysis, qualitative results were extracted for each topic separately [18].

AI-based linguistic data analysis was then performed with

the Nvivo¹ data analysis software as follows: stopwords removal and stemming, word frequency distribution analysis, word clouds and treemaps creation, identification of semantic relations between words. Nvivo provides tools to organize, analyze and visualize unstructured data and gives the opportunity to classify and sort data in ways that enable the identification of topics and patterns.

V. RESULTS

For each topic, the results from the AI-based linguistic data analysis software are firstly presented and then the results from the descriptive analysis follow.

A. Material and Technical Conditions

Nvivo analysis: Predominant parenting issues with the material and technical requirements posed by ERT were revealed. The most frequent words, constantly repeated (apart from the obvious words "lesson", "teacher" and "school"), were the words "course", "computer", "login", "passwords", "problem", "instructions", "stuck", "worried", "email", "Tablet" and "mobile".

Descriptive analysis: Many parents found it difficult to connect to the WebEx Meetings platform, as they were not familiar with computers and technology. So, they had to ask the school or the teachers for further instructions via emails or on the social media. Most of the parents ironically scolded the fact that they did not have any support from the state for technically adopting ERT. They also reported that poor internet connections and many technical problems made them feel panic and great anxiety. They did not know how to solve these issues and as a result they were not able to help their children. Especially kindergarten students or those in the first grades of Elementary school faced even more difficulties, as they could not use electronic devices by themselves. As a result, the presence of an adult next to the students during the courses was mandatory. Older children with SEND were already familiar with technology and they did not face such technical issues. Parents were really worried about the time their children spent in front of a screen and the potential addiction to digital devices use.

B. Educational Dimension

Nvivo analysis: In the Educational Dimension word cloud the most frequent words were: "personal specialized parallel support teacher", "ERT", "classroom", "problem", "help", "focus" and "support".

Descriptive analysis: Parents reported that, although teachers tried to include children with SEND in the learning process, their children were equated with the other students facing weaknesses, and were therefore not able to concentrate and actively participate. They had a much slower learning pace and quickly gave up their effort. Children's participation was characterized by the parents as a formality and a meaningless process. The fast course pace exceeded the abilities of children with SEND, negatively affecting the learning outcome. Those students were marginalized from the educational process. Some parents forced the children to

¹ <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>

participate in ERT. As for those being more tolerant, they had to seek help from specialists, because they did not know how to manage their children's negativity. Parents claimed ERT to be inappropriate for children with ADHD, since it was impossible for them to concentrate on the screen, their concentration was easily lost, they felt uncomfortable and they avoided attending the courses.

C. Psychological and Emotional Dimension

Nvivo analysis: The most frequent words in the Psychological and emotional dimension were: "home", "ERT", "friends", "negative", "frustration", "relation" and "affected".

Descriptive analysis: All parents, without any exception, claimed ERT to have a negative impact on their children. Many children complained of fatigue, eye problems and headaches, while parents also observed negative behavior and various psychosomatic problems (nervousness, communication and social problems, headache and other psychosomatic problems). Constant tensions and irritability also arose. Due to the significant time they spent together with their parents, children lost their autonomy, while the time they worked together independently was significantly reduced. On the other hand, a few parents became more bonded with their children and recognized their weaknesses. The abrupt cut from the school routine shook the children's mental world and they felt «loneliness», «sadness» and «grief». They also missed their teachers and friends, playing, socializing and interpersonal contact. Some children protested and did not want to attend virtual classes. Significant weaknesses were identified in cases of children with speech problems, mainly because they were reluctant to speak out of fear of exposure in front of third parties (other children's parents). A visually impaired student could not participate in the whole process, as the platform was not friendly towards this group of disabled, and the student could not watch anything without help. Parents considered ERT as a "necessary solution", completely unsuitable for students with SEND.

D. Suggestions for Improvement Regarding ERT Implementation for Students with SEND

Nvivo analysis: The Word Frequency Query on Nvivo revealed the most frequent words regarding the Suggestions for improvement of ERT for students with SEND: "personal specialized parallel support teacher", "home", "classroom", "ERT", "difficulties", "friends", "participation" and "needs".

Descriptive analysis: The gap between children with SEND and the other students was widened during ERT. Free provision of digital equipment and internet connection were a prerequisite for the parents. They suggested fewer students for digital classrooms. They required open cameras during courses in order to avoid distraction, as well as a more attractive and specially designed educational content. The main thing they suggested is that children with SEND should continue attending physical classrooms and be excluded from ERT lessons. As an alternative they proposed that the personal specialized parallel support teacher continue to teach the children 'live' (e.g., by making home visits). However, they believe that every child should be treated

individually and the best should be done to meet his/her personal needs.

VI. FINDINGS

Preprocessing was performed on the data before their entry into the Nvivo software. Due to the peculiarity of the Greek language and the number of words or expressions with similar meaning, normalization was performed. More specifically,

- synonymous words and expressions were merged (e.g., "lesson"- "courses", "teacher"- "educator"- "tutor", "internet"- "web", "I was annoyed"- "I was nervous"- "nervousness")
- the same word stem appearing in various grammatical forms (case, number, gender etc.) was identified after stemming (e.g., "lesson-lessons", "difficult"- "difficulties").
- phrasal expressions were replaced with one word with the same meaning (e.g., "could not/it was impossible" were replaced with the word "weakness").
- multiple phrases with the same meaning were replaced with a unique phrase (e.g., "he/she was missing his/her friends", "he was looking for his friends") were replaced with ("lack of friends").
- stopwords removal was applied.

Tree maps were also created in order to reveal correlations of key concepts (section A). Finally, in order to capture the general assessment of ERT's efficiency for individuals with SEND, based on the views of their parents, their comments were grouped into two categories, positive and negative ones, in relation to all research questions (section B).

A. Treemaps

Tree maps (Fig. 1) facilitated visualization of the connection of the three main words, «personal specialized parallel support teacher», «home», «ERT», used in the interviews and the resulting relationship with the other concepts.

Tree maps revealed the most common concepts in the interviews and their connections allowing deeper insight. For example, the concept "computer" was related to two other sub-concepts, "exercises" and "friends". More specifically, the main concepts emerged from the interviews were linked within the text to other sub-concepts and through the tree diagram, correlations of these concepts were revealed.

B. Sentiment Analysis

Sentiment analysis with the Nvivo software showed that parents were completely dissatisfied with ERT. In the interviews, individual sentences, words and expressions of the parents were identified and coded according to their relation with the effectiveness of ERT on their children. All the parents' comments, words or phrases regarding the ERT process were semantically analyzed. The majority of their comments regarding ERT were negative by a 77% rate, while the positive ones were at a 23% rate. The positive comments regarded the teachers and the school staff's hard efforts to help their children. Some most characteristic comments of

the parents regarding their semantic tone for the ERT process are presented in Table II below.

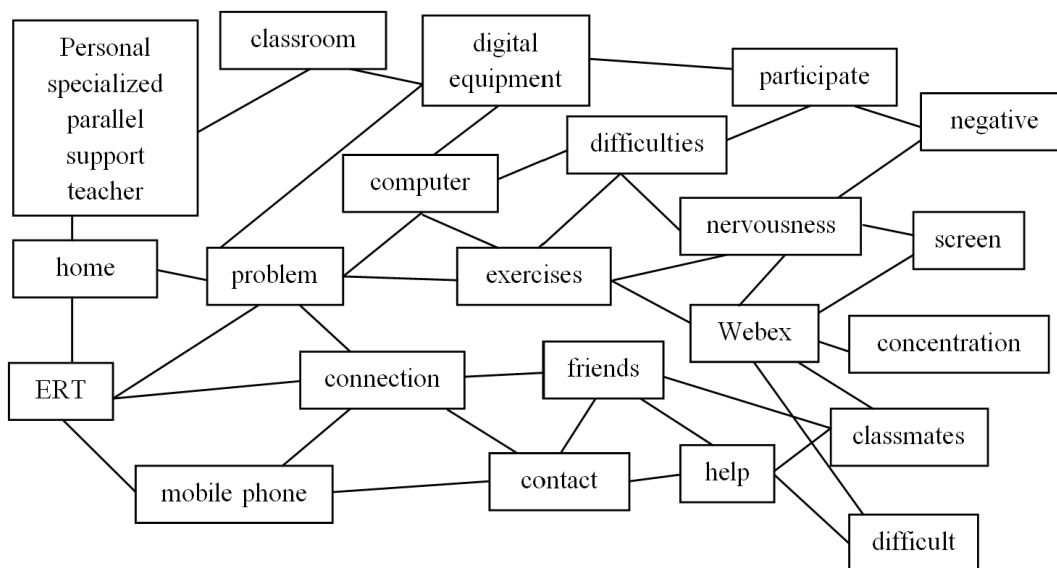


Fig. 1. Tree map—The mainly relationship concepts.

TABLE II: PARENTS’ COMMENTS PER EACH TOPIC

Topic	positive comments	negative comments
Material and technical conditions	"We didn't face any problems", "We had good internet connection. Our child had his tablet and logged in normally"	"Webex or the Greek School Network crashed or didn't work properly", "...everything was stuck", "The child had no contact with electronic devices", "Internet connection was too slow and we had many technical issues."
Educational dimension	"...children were progressing normally"	"She didn't participate normally in the courses...she didn't have enough time follow the course pace and that's why she was lost", "...he was distracted", "...he couldn't concentrate", "he didn't learn anything", "...I think the children remained stagnant. No progress"
Psychological and emotional dimension	(no positive comments were reported on this topic)	"... for children with attention deficit, remote teaching is inappropriate " "He was anxious and very nervous" "... he was whining all the time every day" "...he was tired and he didn't want to connect"
Suggestions for improvement	(no positive comments were reported on this topic)	"Not all the children can be treated in the same way" "...he should have a teacher by his side for support and help him in whatever he needed", "I hope remote teaching will not take place again"

VII. DISCUSSION AND CONCLUSION

Comparison of the results of qualitative descriptive analysis and AI-based linguistic analysis showed that the results were in agreement leading to the same conclusions. Both analysis methods, based on authentic humanistic-linguistic data revealed the parents’ views and the difficulties experienced by the students with SEND during ERT implementation. Due to the lack of digital skills, younger children with SEND needed their parents by their side in order to be constantly involved in the learning process and unfortunately this wasn’t possible for all the cases. Parents felt panic and anxiety, because they had no technical support, facing bad internet connections and technical problems. Thus, parents initially suggested the significance of providing digital equipment and internet connection, preparation and familiarization with the platform, splitting the students into smaller groups in the digital classrooms, the use of open cameras, and interactive, attractive, and specially designed educational content. Apart from the technical

problems, the parents were mainly concerned about the educational, emotional and psychological condition of their children.

Their children developed fatigue, nervousness, communication and social problems, vision problems, headaches and psychosomatic problems. The teaching pace during ERT was prohibitive for children with ADHD who found it difficult to concentrate on theoretical courses, while they attended science lessons more easily. Also, there was no provision for children with speech and vision problems. In order to improve the quality of learning for children with SEND, specialized support was required in the context of inclusive education in order to strengthen their participation in digital learning environments that cover their specialized needs.

Parents mentioned the negative impact on the emotional and psychological state of their children. Behavioral and psychological problems arose, as well as communication difficulties. Due to online courses, social interaction was lost and this led to isolation and psychological burden, because children with SEND are more vulnerable and have frequent

psychological relapses when their daily routine changes. Therefore, it was difficult for parents to manage children with SEND during the pandemic. They suggested that there should be provision for the psychological effects of the ERT and the pandemic period in general, because the restrictions burdened everyone's psychology and negatively affected the relationship between parents and their children. Priority should be given to the needs of vulnerable students and their families. They highlighted that the role of the specialized support teacher should be more active, so that they could individualize the teaching process based on the student's personal needs. Parents who faced challenges with ERT stated some positive comments about the hard effort of teachers and the school staff to help their children. This showed improvement in the engagement of children with SEND in ERT, as other researches confirm, when teachers offered additional support and encouragement [19] and highlight the importance of frequent communication among parents and school staff [20]. Research results agree with previous research and show that ERT was the best possible solution, to protect public health and on the other hand to maintain contact with the teaching process. Parents recognized that ERT was a complementary tool that should always be on hand when schools are forced to close. Nevertheless, they emphasized the urgent need to change the ERT context for children with SEND, fearing regression to previous learning and psychological states. They highlighted, as also stated in other research approaches, that additional support and encouragement [19–21] of those students can be beneficial in order to provide equal opportunities in an inclusive school [22].

VIII. SUGGESTIONS AND LIMITATIONS

The application of ERT for students with SEND, in the Greek educational system, needs sufficient study, since it is an uncharted field. In order to maximize the validity and reliability of the present research, it is necessary to triangulate its results with a large-scale quantitative research, which will study the views of teachers who had students with SEND in their online classrooms. The way in which they worked and the practices they applied in order to integrate them in the courses should be sought and studied. In addition, the research could be complemented by a case study and a diary entry by the researcher. All of the above will reveal the influence and results of ERT on students with SEND.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

All the authors made contributions to the completion of this research. ST was the lead researcher, presented a research proposal, collected data and analyzed them. SN contributed to the study conception and conducted the review of this paper so it was related to the aims and scope of the journal. ST and SN collaboratively wrote the article. KLK supervised and managed the whole process. All authors approved the final version.

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