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INVESTIGATING THE BARRIERS TO USING ASSISTIVE TECHNOLOGIES IN GREEK SPECIAL EDUCATION CLASSROOMS: EFL TEACHERS' PERSPECTIVES

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Abstract:
Empirical findings from different special education contexts worldwide suggest that special education teachers use technologies less than their general education counterparts. The reasons however special educators utilize technology less, remain blurred. This qualitative interview-based study aims to fill this gap and investigate why EFL teachers tend to avoid or neglect assistive technologies in state special education schools in Greece. Thematic analysis was employed to explore the teacher, school, and student-related barriers based on the perceptions of six EFL teachers in special education settings. Findings indicate that the lack of resources, training, technology leadership, time, EFL teachers' emotional struggles and marginalization as well as students' poor digital skills and disadvantaged backgrounds constitute the main barriers to using technology in special education classrooms. Additionally, data analysis revealed that EFL teachers are fully aware of the value of using assistive technologies for learning and teaching. The article concludes by putting forward several macro and micro-level recommendations for facilitating assistive technology use in special education schools in Greece.

Keywords: special education, assistive technology, English as a Foreign Language, barriers, teachers' perceptions

1. Introduction

The English language currently constitutes the dominant means of communication across fields and sectors, including the economy, political and diplomatic negotiations, and trade. English is the current lingua franca (ELF) and it currently functions as the "*global means of communication*" (Seidlhofer, 2020: 35). Thus, learning English which currently constitutes an inherent construct of global citizenship, is an issue of social justice and

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equity (Yılmaz & Söğüt, 2020) Nevertheless, empirical findings suggest students with disabilities are commonly deprived of appropriate EFL education due to a range of factors, including lack of specialized training for EFL teachers who commonly struggle to implement evidence-based practices and use assistive technologies in special education classrooms (Orosco & O'Connor, 2014).

Technology is interconnected to the inclusion of students with disabilities whose numbers are increasing in state education systems globally (Tesolin & Tsinakos, 2018). Assistive technology is acknowledged as a critical factor for attaining the Sustainable Development Goals (O'Sullivan et al., 2023). In education scholarship, assistive technology is commonly employed as a term for the products that facilitate the learning processes of both mainstream learners and learners with disabilities. Assistive technology aims to facilitate autonomy for students with disabilities and minimize the barriers that hinder learning (Starks & Reich 2023). Although the classification of assistive technology varies, Blackhurst (2005) suggests, assistive technology includes all microprocessor equipment, mechanical and non-mechanical, electronic and non-electronic assistances, applications, specialized services, teaching materials and strategies that contribute to (i) creating inclusive learning environments, (ii) facilitating disabled students' learning, (iii) improving disabled students' well-being, and (iv) promoting disabled students' autonomy. Assistive technology can help students with disabilities overcome physical and abstract barriers and participate equally in the educational process. Students with physical disabilities can gain physical access to educational activities through the use of assistive devices, for example through devices activated by the movement of the eyelids or other communication systems that replace oral and written speech. In terms of cognitive accessibility, assistive technologies can safeguard participation through the use of specific software programs and applications. Supportive access through the use of technologies can also be achieved both through the feedback received by teachers and through the positive support that they provide to students (Brownell et al., 2020; Starks & Reich, 2023).

Technology in special education settings can also provide valuable help to educators. It can act as a personal assistant to teachers and help them in numerous tasks and procedures such as curriculum adaptation, creation of personalized learning goals, monitoring of students' development, IEP optimization, and facilitating parental involvement (Arpacik et al., 2023; Ciampa, 2017; Shaheen & Watulak, 2019). Empirical findings within the special education field have shown assistive technology is effective in teaching STEM subjects (Cacciatore 2018; Kellems et al., 2020) as well as essential social and life skills (Baragash et al. 2020; Kang & Chang, 2019).

Despite the advantages, relevant literature suggests special education teachers worldwide seem reluctant to implement technology-enhanced pedagogies compared to their general education counterparts, even though they acknowledge the worth and efficacy of technology for differentiated instruction (Aldabas, 2021; Ghanouni et al., 2020; Starks & Reich, 2023). Previous works exploring barriers to integrating technology in schools have shown teachers' beliefs, attitudes and perceptions largely influence the

manner students utilize technology in class (Starks & Reich, 2023). Technology integration barriers have been categorized as internal (e.g. teachers' attitudes) and external (e.g. lack of equipment). Barriers have also been classified as Teacher-related (e.g. lack of time), School-related (e.g. lack of technology leadership), and Student-related (e.g. poor digital skills). Nevertheless, the bulk of these studies have focused on general education (Tondeur et al., 2017) and the few works that have investigated technology integration barriers in special education (Aldabas 2021; Atanga et al., 2020; Maor et al., 2016; Starks & Reich, 2023) haven't focused on EFL teachers. As a result, the reasons EFL special education teachers utilize technology less, remain blurred and research centering their voices from a bottom-up perspective is imperative. This qualitative interview-based study aims to fill this gap and investigate why EFL teachers tend to avoid or neglect assistive technologies in state special education schools in Greece. The leading question of this work echoes its exploratory nature:

- What are the perceived barriers among EFL teachers in using assistive technologies in special education schools in Greece?

2. Method

2.1 Research approach and participants

The study is based on a qualitative approach. The qualitative paradigm offers rich descriptive data (Creswell & Poth, 2016) and therefore is the suitable research procedure for extracting lived experiences and perceptions. Data were gathered via in-depth individual online interviews which are ideal for promoting participants' self-disclosure on their professional and personal understandings and experiences in using technologies in special education schools. A sample of six female EFL special education teachers participated in the study. Participants' workplaces included special education schools in primary and secondary education. All participants held a postgraduate degree in special education and had more than three years of teaching experience in special education schools. Participants work in Greek state special education schools with students with autism, deaf-blindness, intellectual disabilities, speech learning disabilities, and other speech or language impairments. Informed consent forms were obtained from all participants. The names used in this article are pseudonyms to ensure confidentiality.

2.2 Data analysis

Interviews lasted between 40 and 60 min and were transcribed verbatim. Interview questions focused on personal barriers (e.g. What personal difficulties do you encounter in using technologies in class?), school barriers (e.g., What are the difficulties you encounter in using technologies related to the school?), and student-related barriers (e.g., What difficulties do you encounter related to your students?). The interviews offered bottom-up rich, in-depth descriptions of EFL teachers' technology-related experiences and beliefs in state special education schools in Greece. The author conducted preliminary data analysis employing the open-coding methodology to frame important

excerpts from the textual data that seemed suitable for answering the research question. Coding and cross-case analysis were employed to frame consistent themes across participants' accounts (Creswell & Poth, 2016). Nvivo was employed for first and second-cycle coding. To answer the research question, themes were categorized under Teacher-related barriers, School-related barriers, and Student-related barriers. The author distributed extracts of anonymized interview data to colleagues for coding to examine her interpretations' validity and the average interrater reliability was 89% across codes.

3. Findings

3.1 Teacher-related barriers

Three themes were identified within the teacher-related barriers category, including: i) Lack of training, ii) Time and exhaustion, iii) Emotional struggles.

3.1.1 Lack of training

Participants believed EFL in special education settings is a complex and multifaceted field and reported that assistive technologies can play a decisive role in creating truly inclusive EFL learning environments for students with disabilities. Nevertheless, their accounts revealed they make limited use of technologies due to a range of personal barriers. Inadequate training was mentioned by all participants as a hindrance in implementing technology-enhanced EFL pedagogies in special education classrooms. Although all participants held postgraduate degrees in special education and have also received extensive training on educational technologies, the bulk of these courses were oriented towards other disciplines and subjects such as Greek language and STEM subjects. As Anna said:

> *"As EFL teachers, we have had tons of training, but it was either for general education EFL students or it was in special education but for Greek language or sciences. There is no postgraduate degree for English teachers specifically and the majority of my fellow postgraduate students in my Master's were primary education teachers or Greek language teachers, mathematicians, and so on. We learned very few things regarding specific technologies per disability for teaching and on top of it the focus was always on Greek or Math, not English."* (Anna)

Almost all participants stated they would like to take specialized technology courses for specific types of disabilities. Two participants mentioned they have learned specific assistive technologies from other special teachers through Facebook EFL teacher groups:

> *"I have learned a lot from one specific group, it's for EFL teachers specifically and it's very interesting to see what other teachers do around the world and it actually is much more*

useful compared to the general training we have been receiving from the Ministry of Education." (Chrisa)

"Believe it or not, Facebook has actually helped me more than my Master's. I have found many ideas there specifically for teaching English to students with disabilities whereas my postgraduate degree was addressed to all kinds of disciplines so I got valuable theoretical general knowledge about disabilities but not about apps for teaching English to students with disabilities." (Anna)

3.1.2 Lack of time

Time also emerged as an important personal obstacle in learning and using technologies in special education EFL classes. The majority of participants were also mothers, with increased household and childrearing obligations and thus finding time at home to learn new technologies and design technology-enhanced lessons suitable for their students' specialized needs is impossible. In Stellas' words:

"I drive one hour to get to school, then I come back home and I have my little ones and tons of household chores. It's impossible to sit in front of a computer and search for educational technologies. I don't have this luxury as a working mother." (Stellas)

Similarly, Anna said she constantly feels exhausted and technology isn't something that she can focus on at this point of her life:

"I am so exhausted I forget things, I constantly have anxiety for my students' safety at school then I have my three little ones at home, I really don't have time or energy to sit and concentrate in front of a computer and learn how to use new applications and technologies at this point of my life."

Heavy workloads at school, with endless administrative and bureaucratic obligations were also mentioned as barriers to technology integration. For example, Maria said:

"Greek schools do not have administrative stuff, so it's not just teaching we have tons of secretarial work at school. A large chunk of my daily routine as a teacher involves paperwork, especially in the past three years. We write and write forms and reports and, in the end, nothing changes. We now have evaluation schemes for the school, for us as teachers, we need to write down how we integrate technology in our classes, but we have no technology to integrate other than slow computers and a few tablets we got due to the pandemic." (Maria)

3.1.3 Emotional struggles

Four participants referred to emotional struggles and feelings of marginalization and isolation in their schools. When voicing emotional strains, participants used phrases such as: overwhelmed, draining, feeling unproductive as EFL teachers, worthlessness, stranded, and overpowered. Elena for example explicated her feelings of hopelessness by saying:

> *"I constantly feel tired, without a reason, I feel sometimes that I have lost my EFL teacher identity here because I don't get a chance to teach English. Assistive technologies could help me teach so that I do not lose my identity and most importantly they could help my students learn English. But I don't have the applications that could help me and them."* (Elena)

Elsa and Olga also revealed their teaching motivation has decreased and as a result she has stopped researching new technologies for her classes:

> *"I feel my class isn't taken very seriously by my colleagues and the principal. Sometimes I get the impression they see EFL as a luxury and believe our students should focus in Greek, Math, and life skills. This attitude irritates me…They have low expectations for our students and they devalue me as an educator."* (Elsa)

> *"The pressure and the strain of teaching English in special schools, the emotional struggles we are all going through, the depreciation of EFL even by colleagues, impacts essentially diminishes my willingness to devote even more effort and time for technologies that no one has trained on how to use them and I am not even sure whether they will work."* (Olga)

Lack of confidence and distress in using technologies were mentioned by two participants. Their anxiety and distress related to integrating technology into their classes were also related to the lack of technical assistance within the school. Katerina for example, described an incident when two students got into a fight and hurt each other as she was desperately trying to figure out why she couldn't connect to the internet in front of the desktop:

> *"Special education schools in Greece are hard. Some of the students are aggressive, some of them exhibit challenging behaviors, you have to be on top of them all the time. The one time I tried to use technologies, I was in front of the computer, trying to figure out things and suddenly I see two students fighting. My main worry is their physical safety, not technology."*

3.2 School-related barriers

Two themes were identified within the school-related barriers category, including i) Poor infrastructure and cost, ii) Lack of technology leadership, and EFL marginalization.

3.2.1 Poor infrastructure and cost

A dominant theme in school-level barriers was the poor infrastructure of special education schools in Greece. Most participants described a gloomy picture of the current condition of many special education schools in Crete and Athens:

> *"In Crete, many special education schools are in dangerous buildings that flood in the winter, with parts of the roofs that are ready to collapse, schools where there is no space for the students' therapies…I think that when you have schools that literally look like third-world country schools, you don't worry about technology. This government has an obsession with technology and I also believe technology can help our students but technology cannot be your number one priority when you have students with severe disabilities in prefabricated classrooms."* (Elsa)

The cost of assistive technologies was mentioned by two participants as a major obstacle:

> *"Our students should all have the same access to all these new technologies, but the reality is the Greek educational system is underfunded… In a country where there are no teachers in schools three months after the school year starts, expensive high-tech applications sound a bit like a joke."* (Marina)

> *"I have been working in general and special education schools for more than ten years. The ten-year crisis destroyed public education in Greece and students in special schools paid and still pay the highest price. The technologies we read about online, and the technologies I read in the groups I have in social media from the US or Europe do not exist here. In my school we have issues related to the actual building and the infrastructure, we lack teachers, assistants, and therapists every year. So yes, technology is important but we need a warm, clean school with teachers and therapists, then we will worry about technology."* (Olga)

3.2.2 Lack of technology leadership and EFL marginalization

The lack of technology leadership in their schools was mentioned by almost all participants. Technology leadership in schools essentially covers the development of a technology integration vision, which implies that headteachers and principals promote technology by encouraging the use of technology, offering or facilitating teachers to attend professional development courses, and empowering teachers to implement technology-enhanced pedagogies (Keane et al., 2020). Participants' accounts however suggested that the majority of principals in their schools do not encourage the use of technologies. They all voiced their distress and anxiety about school principals who commonly downplay EFL teachers' requests not only for technologies but in general for classroom resources, training, and professional development courses. Based on participants' accounts, EFL teachers in special schools are rarely involved in decision-

making procedures regarding technologies as they are not considered core subject teachers. In Elsa's words:

> *"EFL is considered a secondary subject so they don't ask us. Greek language teachers, and math teachers, therapists usually decide what technologies we need…This is a wider problem in Greece. EFL is seen as a secondary subject in general education as well. I have worked in primary schools for example, teachers there see us as a complementary part of the school. In secondary education it's the same, mathematicians, philologists see us as a less important subject."* (Elsa)

Katerina mentioned she has a rather turbulent relationship with her principal and she would never ask him a favor for anything, including technology:

> *"I have a principal who doesn't really think EFL should be a subject in special education vocational high schools. He thinks our students should only learn life skills and other practical skills that will help them to be autonomous later. I don't care about me really, but he doesn't understand that he degrades our students with the things he says. I hate it when people and especially leaders have low expectations from special education students."*

3.3 Student-related barriers

Two themes were identified within the student-related barriers category, including i) poor digital skills, ii) diverse needs, and iii) disadvantaged backgrounds.

3.3.1 Poor digital skills

Students' poor digital skills emerged as a significant barrier to integrating technology for EFL teaching purposes. Anna reflected on struggling to teach students basic digital literacy skills. Katerina also said that the majority of her students are unaware of how to navigate the chaotic unstructured web environment and as she said "*some of them struggle to switch on the computer*". Marina stated:

> *"Not all students are the same, some of them can use technologies, and some others can't. It depends on the type of disability…Students with working memory problems for example sometimes get stressed and overwhelmed because they struggle to remember the procedures and the steps to use for example a computer or a tablet."* (Marina)

Stress and anxiety caused by students were also mentioned as obstacles in integrating technology:

> *"I really care for my students; I do but the circumstances in special education schools are very difficult. We have severe cases of intellectual disability, autism, and they get stressed very easily, so when I see I push them too much, I stop."*

Stella spoke about the importance of self-regulation in developing digital literacy and proper technology use. Her students as she said "*struggled and still struggle because they haven't been properly taught how to develop self-regulation strategies in using technologies at school*". This in turn has a negative impact on her integration of technology in her class, as she avoids using technology out of fear of potential misuse. Anna expressed her guilt for not being able to use technology to meet her students' needs:

> *"They are marginalized, they are weak, they are sensitive souls that deserve the best education. I wish were able to fulfill all their needs. But it's impossible and I really feel guilty about it and I do wish we had specific assistive technologies, for the needs of each specific disability. All the times that we had the opportunity to use specific technologies for autism for example, it worked. But this is not everyday practice, most of the time are specific programs from a university for example for specific weeks and trained people and PhD students, professors come here, and do an intervention but then, it finishes. They don't train us, they don't give us these technologies for free."* (Anna)

For Elsa, technology isn't the number one priority, especially for students who she says have difficult family environments:

> *"I am not saying technology isn't important, of course it is, especially for students with severe disabilities. What I am saying is, some of my students lack basic things more important than technology and we as educators must first demand first and foremost the fulfillment of these needs…They need love from us and their parents, the need food, they need clean clothes, heating in their homes, strong and mentally healthy parents who are supported by the state and can in turn offer proper parenting."* (Elsa)

3.3.2 Disadvantaged backgrounds

Equipment and connectivity were commonly reported barriers by participants, particularly for students coming from lower socioeconomic backgrounds. Participants accounts revealed that many of their students lack access to computers or mobile devices such as phones and tablets at home as well as internet connection. Anna recalled her experiences during the Covid lockdowns:

> *"Everybody takes for granted all students in Greece have access to computers and tablets and the internet. I also believed that and then Covid came and I realized many of my students lived in homes with no heating, let alone computers and internet connection."* (Anna)

Elsa said:

> *"A lot of the parents we have at school have one mobile phone with no internet connection at home, many of them do not know how to use them properly. They work twelve hours a*

day to put food on the table and pay for therapies and tutors and doctors. I cannot tell these parents train you child at home how to use a phone or a tablet. That's our job but it is very difficult because these students are not familiar at all with technologies and we do not know how to help them." (Elsa)

Olga also talked about how intersections of students' disabilities, lack of financial resources, internet infrastructure in homes, intertwined and generated multifaceted obstacles to EFL learning during and after the Covid-19 pandemic:

"Covid really unmasked the real situation of students with disabilities in Greece. I had students from villages who didn't even have signal at home and their parents had to take them to the central cafeteria of the village to have a lesson. I had students who weren't able to participate at all because their siblings were using the single mobile phone of the household. I had mothers in desperation who were calling me to apologize for the fact that my students couldn't attend my online class because they had to be on top of their other children at home, they wanted me to know that it's not like they don't care about English but they simply cannot convince their children to sit at a chair and look at a screen for more than ten minutes. They had no help, no therapists, no support…And now, after Covid, once again, they are at schools with no therapists and teachers for months. With computers and equipment that need maintenance and updates and nobody really cares except for us who cannot fix them, because we do not know how." (Olga)

4. Discussion and implications

This work investigated the assistive technology barriers of EFL teachers in special education schools in Greece. Findings indicate many of these barriers are related to the highly-centralized and underfunded Greek educational system (Seiradakis 2024; Traianou, 2023), such as late recruitment of teachers and therapists in special education schools, but also to obstacles existing in other special education contexts. Lack of technology leadership and technical support as well as poor equipment is in line with previous works on technology barriers within special education settings (Ghanouni et al., 2020), although these works didn't focus on EFL teachers. Leadership in schools plays and has always played an important role in shaping a supportive technology school climate (Kaya-Kasikci et al., 2023). School leaders need to create an environment of collaboration, and offer concrete support to their teachers as their leadership style directly influences their self-efficacy beliefs and motivations regarding the use of technology. Providing prompt technical support at special schools is of paramount importance for minimizing teaching distress and disordered classrooms as even a well-designed lesson can be suddenly interrupted by an internet connection failure. Inadequate training is also consistent with previous empirical works (Atanga et al., 2020), as is participants' reports on the lack of university preparation programs focusing on assistive technologies for pre- and in-service special education teachers. Time, cost, and exhaustion are in agreement

with previous works investigating barriers to technology use in special education (Starks & Reich, 2023).

A new finding that hasn't been reported by previous works is the marginalization and devaluation of EFL teachers in special education schools. Participants' accounts indicate that other than the external and internal barriers found in similar works, EFL in the Greek special education context seems to be perceived as somewhat less important compared to other subjects taught. This finding is worrying and needs further exploration and more studies in order to explore whether this covert marginalization exists at the national level through quantitative works with a larger sample. Comprehending the barriers in in-service EFL teachers can help EFL teacher-preparation programs better prepare EFL teachers to enter the unstable field of special education. Special education preparation programs, commonly assume novice educators can automatically create change, by supporting and advocating for students with disabilities. Yet this change is only probable if educators have a sense of opportunity. Participants of the current work felt sidelined and marginalized. If the EFL teachers' feelings of doubt, guilt, and fear are not answered with possibility and vision, it seems unlikely that they will make use of new assistive technologies particularly if they remain in school environments that perpetuate the marginalization of them as teachers.

Current work findings have implications for EFL practice in special education settings. At the macro level, the Greek Ministry of Education must allocate the required technological resources to marginalized special education schools around Greece. Specialized assistive technology training for in-service EFL teachers currently working in special education schools should also be offered, since based on participants' accounts, the vast majority of training programs offered by the ministry are irrelevant to their students' needs. Pre-service EFL programs should also include courses relevant to assistive technology and behavior-tracking applications. Supporting and enhancing students' digital literacy skills is also of vital importance. Integrating digital literacy and citizenship programs combined with EFL in special education schools is imperative for safeguarding these already marginalized students to become skillful in technology and the current lingua franca (Buckingham, 2015). Much like access to medical care, assistive technology accessibility for students with disabilities in state schools constitutes a human right and cannot be seen as a form of luxury. Students with disabilities need assistive technology to be able to participate in their EFL classes. Education stakeholders in Greece are obliged to find solutions and create strategies aiming at meeting these students' diverse learning needs in EFL.

4.1 Limitations

The current work fills an important research gap in technology integration literature by explicating the barriers among EFL special education teachers in employing assistive technologies. Nevertheless, several limitations must be acknowledged. The small number of participants sample and the fact that these teachers were recruited from two specific areas in Greece, means generalizations are prohibitive. Despite the fact the interviews

explicated a wide range of EFL educators' lived experiences and perceptions regarding assistive technology barriers within the Greek special education field, a larger size sample of EFL teachers is needed to shed light on teachers' perceptions from other geographical locations in Greece.

Conflict of Interest Statement

The author has no conflicts of interest to declare that are relevant to the content of this article.

About the Author

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