

A NATIONAL STUDY ON DISTANCE LEARNING APPLIED TO STUDENTS WITH HEARING IMPAIRMENT AND VISUAL IMPAIRMENT IN THE FACE OF COVID-19

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Theoretical background: Among the students most affected by the covid-19 pandemic are those with special needs (UNESCO, 2021). In Portugal, the first lockdown of schools was on March 2020, when a set of measures establishing an exceptional distance learning modality was defined. Concerning students with sensory impairments, data revealed increased rates of access to a diverse set of devices and internet connectivity (Saraiva & Cruz-Santos, 2021). At the beginning of 2021, another lockdown of all teaching activities was determined by the government. Therefore, the present study intends to analyze the materials (computers, tablets and/or smartphones, etc) and non-material (internet) technological resources were available to students with sensory loss (auditory or visual) at home, aiming to:

- identify which technological resources are available at the student's home;
- realize if the resources are for the exclusive use or have to be shared;
- identify the quality of the internet network connection;
- realize whether the quality of internet service condition the students attendance to online classes;

Material and Methods:

Sample. 68 students with sensory impairment, attending reference schools for students with sensory impairments. Due to the reduced number of visually impaired students (n=4), it was decided not to include them in the analysis and, consequently, in the results presentation. Regarding the 64 hearing impaired students, 35 are male, 34 are diagnosed with severe/profound deafness, attending different levels of schooling.

Instrument. An online questionnaire was developed, through which generic (gender and age), scholar (schooling level) and personal data (type of disability, severity of sensory loss, digital resources available at home, exclusivity level of resource use) were collected, as well as internet quality provided at home and distance learning attendance routines.

Data collection. The access link for the questionnaire was sent by email, in March 2021, to all Reference Schools for Bilingual Teaching to Deaf Students (EREBAS¹), Reference Schools for Teaching Blind and Low Vision Students (EREACBV²) and mainstream schools from the Autonomous Regions of Azores and Madeira.

¹ [Escolas de referência para para a Educação Bilingue | Direção-Geral da Educação \(mec.pt\)](#)

² [Escolas de referência no domínio da visão | Direção-Geral da Educação \(mec.pt\)](#)

Results: Regarding the technological resources available at home, 84% (n= 54) of households have a computer, although in 66% (n= 36) of cases this device was for the student exclusive use. It is worth highlighting that 13% (n=8) of whole sample had other devices other than computer, while 14% (n=9) could only have access to online classes and learning contents through a tablet or smartphone.

Towards the online classes attendance according technological resources available at home, 72% (n=46) were assiduous, though there was a greater attendance rate (78%, n=36) among those who did not have to share resources with other members of their household. For those students who had to share them (n=22), 45% (n=10) regularly attend online classes, have the Mann-Whitney test showed a statistically significant effect of technological resources availability on student attendance at online classes [$U=255,000$; $p<0.001$].

Concerning the online classes attendance according the internet service at home, more than half of the students (53%) who assiduously attended online classes, have rated their internet connection as average quality. It is also important to highlight among students with an intermittent attendance to online classes, the majority (64%) with an average quality of internet connection had to share the resources available at home, while among those who had a good network connection this percentage was higher (75%).

Discussion and conclusions: Regarding the available resources, the computer was present in the majority (86%) of the households, which is substantially higher than that observed months before in students with the same sensory loss (49%) (Saraiva & Cruz-Santos, 2021). Furthermore, two thirds of the sample had no constraints on those resources use, resulting from sharing them with other elements of the household, which is a reality also observed in Dutch children (Bol, 2020). Related to connectivity issues, internet quality was mostly rated from average (56%) to good (37%), which places Portugal in 26th place in the world ranking, ahead of countries such as Germany, Italy, United Kingdom, Canada, among others (Speedtest, 2021b). However, 3% of the sample do not have access to Internet at home, which is significantly lower than that observed in other countries, such as the United States (18%), Bulgaria (60%), Netherlands (10%), Brazil (2020), or Australia (Pietro et al., 2020; Wenczenowicz, 2020; Drane, Vernon & O'Shea, 2020). Concerning the students attendance to online classes, the rate was high among students from all grade levels, except pre-school. Despite the scarcity of studies focusing on the attendance of special needs students to online classes, the low dropout rate observed in the present study contradicts that from other countries, which varied between 20% in Turkey to 39% in North American (Chang et al., 2021; Yazcayir & Gurgur, 2021). Although the important indicators the present study reveals, some issues could have been deepened, such as parents education, families socioeconomic status, teachers monitoring level throughout the distance learning period, as well as the parents knowledge regarding the digital tools skills associated with distance learning.

The present study revealed the existence and availability of technological resources at home, as well as the quality of internet connection, did not affect students with sensory impairments level of attendance in activities developed in the distance learning context, with high online classes

attendance rates observed, which can be interpreted as the ability of these children's families to provide them with the necessary resources for an adequate participation and inclusion in this teaching model, enabling timely intervention aiming to their educational success.

Acknowledgments: This work was financially supported by Portuguese national funds through the FCT (Foundation for Science and Technology) within the framework of the CIEC (Research Center for Child Studies of the University of Minho) projects under the references UIDB/00317/2020 and UIDP/00317/2020.

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Keywords: Distance Learning, Sensory Impairments, Resources, COVID-19

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