

The deaf's e-learning challenges during COVID-19: Moroccan case study

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Abstract

Aim: The lockdown that followed the outbreak of the COVID-19 pandemic necessitated implementing several emergency measures, including some in the realms of education and social services. Classes at all schools have been canceled and replaced by online instruction. Health and protection decisions have also resulted from the pandemic, significantly affecting many people's lives, especially those with particular requirements. By adapting and improving their innovative methods, Association Marocaine pour Enfants Sourds (AMES) provided effective remote instructions. In this paper, we look into how deaf students in Morocco coped with online education during the country's 2020 lockdown.

Methodology: The challenges and communication barriers that deaf students in Morocco face are first examined and discussed. After that, we look into why, unlike most deaf schools around the world, AMES shut its doors on its deaf students and left them out. We used a qualitative and quantitative approach by conducting a survey and a thematic analysis of the results.

Findings: Issues with education, communication, digital illiteracy, and e-learning absenteeism were all highlighted in this research. After that, some suggestions are made.

Implications/Novel Contribution: The challenges faced by deaf students in Morocco as they transitioned to online education during the pandemic are investigated in this study. In Morocco, where COVID-19 has had a significant impact, e-learning is still in its infancy compared to other countries.

Keywords: Deafness, in-person class, remote learning, COVID-19, Language pathology, communication barriers, challenges, digital divide, digital content.

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INTRODUCTION

Most nations have decided to close their educational institutions by March 2020 as a precaution against the COVID-19 pandemic. The lives of millions of people, both young and old, were saved by this swift and decisive action (Viner et al., 2020). According to (UNESCO, 2020), there are more than 60 million students worldwide as of 2020. Choices made regarding health and safety in response to the COVID-19 epidemic have significantly affected people's lives. Tragically, PWD is disproportionately affected during rapid and unexpected change (Gleason et al., 2020; Shahbaz, Sherafatian-Jahromi, Malik, Shabbir, & Jam, 2016).

Because of social distance measures, many schools in COVID-19 have had to transition away from in-person instruction and toward online or hybrid models, creating barriers to the education of people with disabilities. According to Hodges, Moore, Lockee, Trust, and Bond (2020), online education is "emergency circumstances that necessitate a switch to an alternative mode of delivering instruction. Instead, instruction or education that would normally be delivered face-to-face or as a blended or hybrid course is provided entirely through remote teaching solutions; once the crisis or emergency has passed, the traditional delivery method is resumed." Students with disabilities often receive less help, and teachers often lack the necessary skills to instruct them to (UNESCO, 2020) properly. Problems with the e-learning system, especially for the deaf and hard of hearing, were uncovered by the website Hanjarwati and Suprihatiningrum (2020). These included a lack of assistance, expensive internet connections, and a general inability to use the system. Their education, social lives, and communication skills have all suffered due to these decisions and school closures.

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No research into the effects of COVID-19 on deaf education has been done in Morocco, as far as I am aware. Our research is the first to investigate the challenges faced by deaf students in Morocco as they transitioned to a completely online education program during the pandemic. In Morocco, where COVID-19 has had a significant impact, e-learning is still in its infancy compared to other countries. Women make up 100% of the AMES faculty, and knowledge of the deaf community is widespread. It is not true that Morocco has a unified and established sign language community. Therefore, without adequate self-esteem in communication, the Deaf may continue to experience marginalization. Challenges with deaf education, communication barriers, digital illiteracy, and e-learning absenteeism were all highlighted in this study. This research will shed light on issues and challenges that impede online education for students who are deaf or hard of hearing. Also, we plan to look into AMES's online education offerings.

LITERATURE REVIEW

We choose these provisional definitions to provide an overview of the communication and learning environment pertaining to the deaf community/deaf people to examine later how far the COVID-19 pandemic protection strategies have posed barriers to deaf communication and learning.

Speech-language Pathology

Speech pathologists investigate issues with hearing, speaking, and swallowing. There is no age threshold for the onset of communication disorders, which can be either genetic or learned. Both disorders and delays qualify as pathology.

According to the World Health Organization, 432 million adults, and only 30% of those over 65, have significant hearing loss. Speech-language pathologists specialize in treating people with hearing loss or total deafness because these conditions affect one's capacity to understand spoken language (World Health Organization, 2020). According to the medical definition of deafness, the individual has such severe hearing loss (typically 70 dB or more) that they cannot hear speech through their ears alone, with or without the aid of a hearing device (S. Khan, Jam, Shahbaz, & Mamun, 2018; Qazi et al., 2014; Waheed, Kaur, Ain, & Hussain, 2016).

People who are hard of hearing or partially deaf have a loss of hearing that makes it difficult, but not impossible, for them to understand or hear speech through their ears alone, with or without a hearing aid.

Augmentative and Alternative Communication

As a result of their hearing loss, the deaf person must rely on AAC methods to communicate. Alternative and augmentative communication (AAC) systems are designed to help people who have trouble using traditional methods of communication (such as speaking or writing) to express themselves. The ultimate goal of augmentative and alternative communication (AAC) is to help people express their needs, wants, and emotions to others so that they can live more independently, achieve their goals, and contribute to society.

Sign Language & Lipreading

The most important communication means used by the deaf include a range of approaches ranging from sign language and Dactylology to Lipreading and Cued speech.

- Sign language is a sensory, visual system based on the connection between sign and sense. It is human language, not using voice to convey the meaning.
- The production of gesture signs leans on necessary elements called components. Those components are located on or near the body, hand(s) movements, handshapes of hand and fingers, the orientation of the hands, and facial expression.
- The last element that can interfere with gesture sign production is facial expression. Facial expressions can be defined as one or more motions or positions of the muscles below the skin of the face. It is claimed that these movements convey an individual's emotional state to observers/hearers. Facial expressions are a form of nonverbal communication. In sign languages, the meaning of signs can differ when the facial expression is changed.
- Lipreading, also known as speech reading, is a technique of understanding speech by visually interpreting the movements of the lips, face, and tongue with the information provided by the context, language, and residual

hearing.

Here are some tips for the family when conversing with a lip reader person:

- It is advisable not to shout. This distorts your voice. Face the hearing-impaired person and talk in a normal voice at close range;
- It is advisable to avoid chewing, eating, or covering your mouth with your hand when speaking to a hard-of-hearing person;
- Facial expressions, gestures, lip and body movements all give cues;
- Good lighting on the face of the speaker is important.

Online distance learning was seen as challenging because it necessitated efficient communication channel mediums, but it did not meet the communication channel requirements of the deaf. Most typical methods of course delivery were laborious, and students often felt isolated as a result.

The topic of studies for deaf and hard of hearing have been the subject of many studies. For instance, a study conducted by [Kritzer and Smith \(2020\)](#) highlighted the significance of parents actively seeking out and communicating with their children who are deaf or hard of hearing to ensure their children receive the best possible educational opportunities. Technological difficulties, time constraints, and language barriers make remote learning extremely challenging for deaf and hard-of-hearing people, according to a study of the obstacles to e-learning cited by [Alsadoon and Turkestani \(2020\)](#). During the COVID-19 pandemic, [Smith and Colton \(2020\)](#) suggested using YouTube channels to educate DHH students by conducting a literature review. The authors demonstrated making and sharing instructional videos on YouTube for DHH students.

Furthermore, many sectors, including education, appeared to be hampered during the global COVID-19 epidemic. Teachers and students alike have needed help adjusting to the widespread use of online education across disciplines and levels ([Reimers, Schleicher, Saavedra, & Tuominen, 2020](#); [Jam, Akhtar, Haq, Ahmad-U-Rehman, & Hijazi, 2010](#); [T. I. Khan, Akbar, Jam, & Saeed, 2016](#)). Disabled students may have had a much more intense and challenging experience ([Baroni & Lazzari, 2020](#); [Jam, Mehmood, & Ahmad, 2013](#)). Several components must be needed for a distance learning experience to be productive online.

The inability to digitize physical learning materials and the lack of student access to digital devices are among the key technical challenges identified by [Baroni and Lazzari \(2020\)](#); [Reimers et al. \(2020\)](#).

One of the significant challenges has been training teachers to "acquire remote competencies in planning, executing, and analyzing their students' success," as stated by [Toquero \(2020\)](#). Conflicts arose between educators, parents, and students due to education's many shortcomings and outright failures to meet their needs.

When looking at a crisis's social and emotional aspects, "anxiety, loss of peer contact, and limited options for stress control" were the most significant issues [Fegert, Vitiello, Plener, and Clemens \(2020\)](#).

Improving teachers' ability to "acquire remote competencies in planning, executing, and analyzing their students' success" has been a significant challenge, as stated by [Toquero \(2020\)](#) and cited in ([Toquero, 2020](#); [Ahmad-Ur-Rehman, Haq, Jam, Ali, & Hijazi, 2010](#)). Conflicts arose between educators, parents, and students due to education's many shortcomings and outright failures to meet their needs.

[Fegert et al. \(2020\)](#) highlighted the following issues during a crisis, emphasizing social and emotional factors: "anxiety, loss of companions contact, and limited options for stress control."

METHODOLOGY

The COVID-19 pandemic has reached epidemic proportions, and as a result, all schools have closed and canceled in-person instruction. Education authorities decided to implement a remote-learning system to prevent student deaths and protect educators. This crisis impacted learners everywhere, but those with language pathologies like autism, Down syndrome, blindness, aphasia, and deafness were hit the hardest because they rely so heavily on face-to-face instruction and the full support of their speech and language therapists and teachers. The Deaf have it worse than anyone else because they have no way to learn, understand, or use language. On February 5, 1975, the Moroccan Association for Deaf Children was established with funding from the Wilaya of Casablanca's Department of Medicine and the help of several generous individuals. The Urban District of Casablanca provided a 500-square-meter space at the corner of Adamir El Kabir Street and Ziraoui Avenue. Ten students made up the first class of the organization. Pupils here progress through the same grades as they would at a Ministry of Education.

Learn how to properly articulate and pronounce words like "démütisation" over three years of preschool. There are currently 153 students enrolled at the Association, 105 male and 64 female, all of whom have varying degrees of deafness. Using a variety of sources, including documents, scientific articles, and analyses from a survey with teachers of deaf students, this research can be classified as qualitative.

Based on the work of [Roulston \(2001\)](#) and [Braun and Clarke \(2006\)](#), we used a deductive theme analysis to examine the qualitative information we gathered. We decided to use thematic analysis to understand instructors' responses better and draw conclusions from the data. This method has been proven effective and helpful in studies of the deaf and hard of hearing. Conversely, it is quantitative, as we surveyed Association Instructors via an online platform.

The following procedures were used to conduct this study in AMES. It used a survey to look into the challenges that deaf students had with online education throughout COVID-19. The first step in this process was to formulate the survey's questions by drawing on prior research on the deaf situation in Morocco and a preliminary assessment of the relevant literature. The survey was then administered. The data was then subjected to thematic analysis, which yielded a theme map backed up by an analysis of the results.

We dissected the challenges and communication barriers that deaf students in Morocco face. In addition, we looked into why (AMES), unlike the vast majority of deaf schools around the world, closed its doors to deaf students and left them out in the cold. Quantitative and qualitative methods were combined as a survey and a thematic analysis.

Our years of research in the field of deaf education have been aided by the challenges we gained from studying and analyzing those materials. Deaf and hard-of-hearing students face three main challenges to their education: social isolation, the inability to see others' faces, and technological difficulties. By discussing and analyzing the Deaf education challenges, communication barriers, digital illiteracy, and e-learning absenteeism, among other points during this pandemic. We will attempt to elucidate and show the effect of this pandemic and its resulting decisions on Deaf education and then suggest some solutions.

RESULTS AND DISCUSSION

Face Mask

The Deaf and hard-of-hearing community was already at a disadvantage in the early days of the pandemic because many rely on lip reading for effective communication. As a result of the widespread COVID-19, it has been difficult for the world's deaf and hard-of-hearing population to communicate. They have fought for decades to make the world more accessible and inclusive, but COVID-19 has created barriers to entry and communication. The problem stems from the fact that those who are deaf, especially the lonely ones, have been thrust into and kept in a state of isolation due to this virus. The Deaf are already at a greater risk of social exclusion and loneliness due to these garments.

When communicating with others, people who are deaf or hard of hearing must rely heavily on nonverbal cues such as facial expressions, lipreading/speechreading, and other visual cues. In the early stages of the pandemic, however, mask use in public places, workplaces, and schools became mandatory. Masks have created yet another barrier to learning for the deaf and hard of hearing, as it is well-known that the face is an important aspect of communication, whether signed or spoken.

Because the mouth is such an integral part of sign language, the deaf community claims and explains that face masks have hampered their rights and communication flow. It was bad news all around," Baugher said. "In your disguise, I cannot tell if you are joking, raving, or deadly serious. The question now is, "What should I do?" My "smile and nod" is a common interpersonal communication mechanism. I usually nod and smile politely before continuing."

For the Deaf, mouth morphemes indicate adverbs and adjectives; however, communication is hindered when a mask is placed over the mouth. A conversation or discourse also relies heavily on the mouth. When interacting with deaf students, it is now required that all school personnel wear clear, transparent face masks and shields.

Additionally, the masks make it exceptionally difficult for those around them who are proficient in lipreading to decipher facial expressions.

Because lipreading is such an important communication skill for the deaf and hard of hearing, any barrier

preventing them from doing so can negatively impact their emotional well-being. It's been found that many people, regardless of their hearing loss, rely heavily on lipreading when interacting with those who speak to them. Because your mouth movement, smiles, grimaces, and other facial expressions are visible, even those who are not hard of hearing will have an easier time understanding what you are saying.

Social Distancing

Deaf students and teachers must have regular, in-person contact to receive the best possible education and foster the most rapid, meaningful growth in their deaf students' learning abilities. Because they relied on sight, teaching and learning for the deaf is a continuous visual process. They learn best when they can see what they're being taught, so they require frequent opportunities for one-on-one communication and instruction. Because of this, the social aspect of school life for the deaf is fundamental, as is being within and supported by teachers, family members, and friends. Deaf people place a high value on this interpersonal connection.

One of the health and protection decisions imposed by the COVID-19 pandemic was social distancing, and those who are deaf were deprived of this. With this new emergency, deaf students should usually and mandatorily switch to remote learning. The need for social distancing will continue to limit the deaf's possibility and ability to interact with their teachers/peers in person. This part of their school social life would have a devastating effect. Almost all deaf students have been put in emotionally and socially damaging situations because they cannot communicate with their peers and educators.

The sad truth, as reported by principals and teachers at deaf schools, is that most families of deaf people do not know or use sign language for teaching and communicating at home. This is due to various social, pedagogical, and cultural factors. The pandemic has kept them captive in their home, where they try desperately to communicate through made-up sign language each day. With this new pandemic, deaf students are suddenly faced with extreme isolation. Students who are deaf are often excluded and marginalized due to a lack of resources and accommodations tailored to their communication and social needs. At school, they can find their niche in a socially accepting setting.

As language is considered the foundation of all kinds of development for hearing and deaf people, the social distance experienced by deaf students who cannot acquire language in a physical classroom significantly impacts their cognitive level. Moroccan deaf students are in a difficult position. They were shunned and ignored, and they received no help or attention. They have yet to receive individualized instruction or counseling from the Ministry of Education. A telephone survey of deaf school principals suggests that no special measures were taken to help deaf students catch up on their studies during the pandemic. The ministry did not even consider providing a sign language interpretation of the curriculum for the deaf. They were abandoned to deal with the mental and academic fallout of the pandemic on their own. They've been subjected to disproportionate discrimination and exclusion from society.

Technology Challenge

During the lockdown, deaf students have no access to education or schooling. This needs to be emphasized. As a result of the pandemic, lockdown procedures were instituted across Morocco, and deaf schools were closed without any prior warning. Students who are deaf are now expected to learn and acquire skills using digital platforms. Most websites do not cater to the needs of the deaf community. Despite school closures due to the spread of COVID-19, there currently needs to be a strategy in place in Morocco to guarantee the availability of quality, all-inclusive education. School administrators at deaf institutions are confident that online learning platforms cannot replace the direct interaction between teachers and their deaf students.

According to school administrators, the Ministry of Education has yet to provide teachers with professional or technical assistance. Educators need to be aware of the potential of remote learning and have yet to consider using interactive platforms. It's true that many educators and administrators now have smartphones, but that doesn't mean they can effectively use them to instruct deaf students in all subjects. It's important to remember that educating a deaf student requires a different approach than that taken with a hearing student. The Deaf require a great deal of individual attention, face-to-face instruction, and time spent in the classroom. "It's a complicated task with no resources and limited guidance from the ministry of education," one of the principals said. They are the only people at school who communicate with the students who are deaf. Concerning social support, including personal

assistance and protection advice, WhatsApp was the most famous tool used by principals with deaf students.

As an added complication, principals have reported that neither the government nor the ministry of education has developed or provided any specialized platforms for distance education that are suitable and cater to deaf students. A deaf student who saw his hearing sibling use remote learning shared his frustration: "the deaf students will expect something like hands and signing gestures besides some body postures helping them to know/understand what/how the other is trying to convey, but all that is restricted on all online video communication platforms as they are bordered and limited in terms of motion people can see" (Liddell, 1980).

Parents cannot interpret for their deaf children who are enrolled in online courses, particularly those that involve discussions of science and mathematics. They need to learn how to sign for so many different things. COVID-19 is an abstract concept that will be challenging to explain to children and their parents. Using distance learning will be difficult for families with more than one deaf child. Many times, deaf students will need to use both the internet and the phone at the same time. The mom or dad will have more responsibility for this operation.

Deduced Themes

Braun and Clarke (2006) recommendations influenced our study's theme analysis method. Therefore, we looked over the responses, extracted the codes, and ensured they were pertinent to our goals and the review of the relevant literature.

The Survey

Face-to-face interviews were conducted to collect the necessary data because they are more effective than other methods. After all, respondents are more likely to trust the interviewer and provide direct and unambiguous responses.

Theme Map

Thematic analysis eventually stimulates the production of this theme map. A theme map was used in this study to show the ideas gathered from the interviews and their connections. The deduced themes can be summarised in four points:

1. AMES instructors have no training or preparation for emergencies; COVID-19.
2. No available resources for AMES pupils: almost all have no digital devices.
3. Most AMES instructors suffer from digital illiteracy, the digital divide.
4. AMES administration prepared no teaching methods and digital content for emergencies.

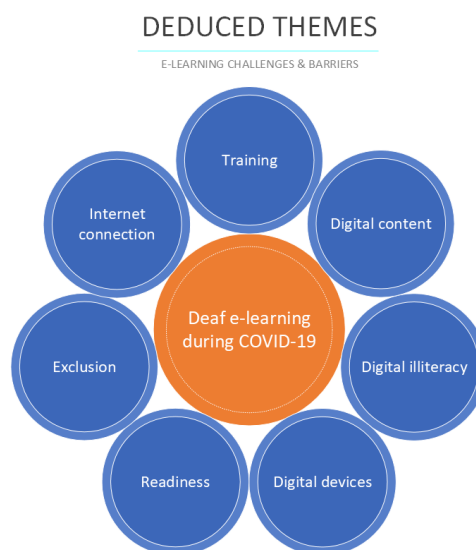


Figure 1. Thematic analysis results

Interview

A survey was carried out to collect both quantitative and qualitative data. Our results have been organized into four challenges, described in the following part, supported by graphs.

Gender

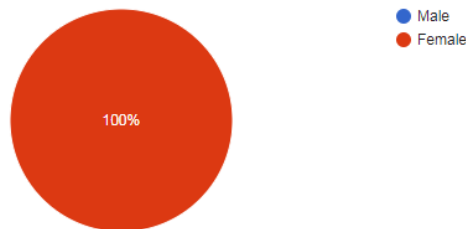


Figure 2. Respondents' gender

All AMES teachers are women, as it is mentioned earlier.

Age

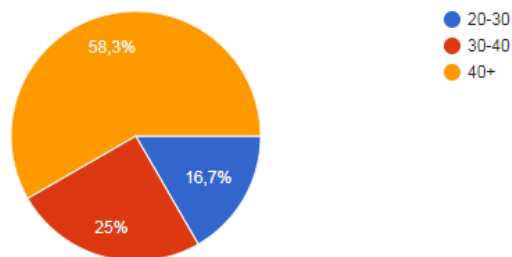


Figure 3. Respondents' age

Most teachers are over 40 as they started their career in this school and have started being very familiar with deaf education.

Education

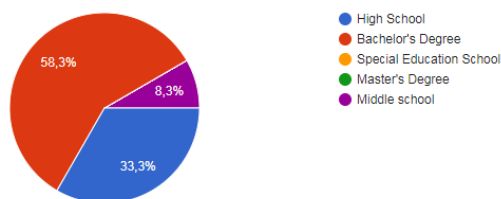


Figure 4. Respondents' education level

This figure gives a clear idea about the instructors' educational background, which is one of the biggest challenges for deaf education. They are neither specialized in deaf education nor have special education diplomas.

They lack a lot in this field and cannot help the deaf develop their competence, mainly during emergencies, i.e., COVID-19.

Do I use the internet for teaching purposes with the pupils?

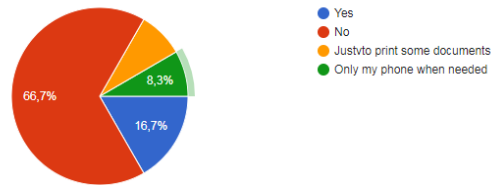


Figure 5. The use of the internet

One of the crucial problems hindering deaf education during COVID-19 is the incapacity and lack of using the internet in teaching: moving to Online communication.

I use

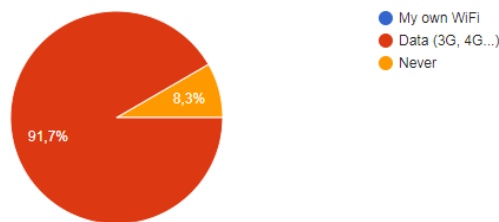


Figure 6. Internet connection

They use personal resources to connect and restrain instructors' ability and willingness to develop and update their teaching methods and digitalize the lessons.

I have access to the internet

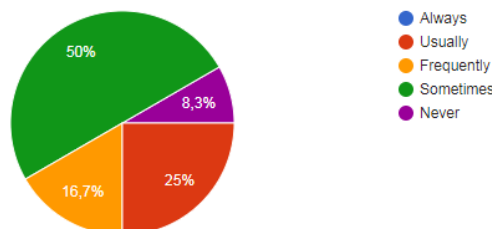


Figure 7. Frequency of internet use

During COVID-19, the internet connection was a significant issue that negatively impacted deaf education, as shown in Figures 6 and 7. The government and the school administration need to provide resources to help the teachers, including technological equipment.

Do you have a professional email address?

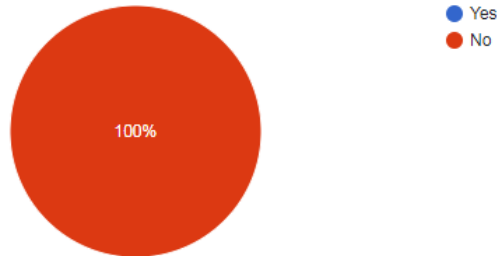


Figure 8. Having an email account

The teachers needed access to email because the school could not afford to maintain a website or provide individual email addresses for each teacher.

Do you know about Information and Communication Technology (ICT)?

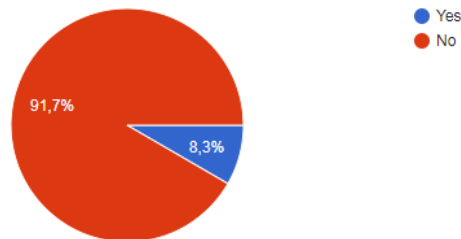


Figure 9. Information and communication technology

Almost all AMES professors are completely unaware that there are alternatives to traditional ways of teaching.

Do you have an idea about e-learning?

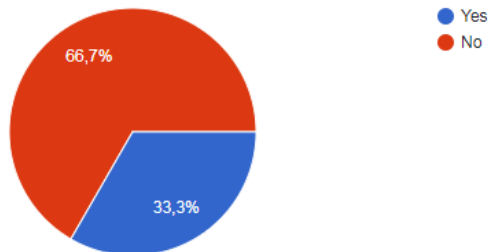


Figure 10. E-learning

Only 1/3 knew or exactly heard about e-learning from their surroundings.

Have you ever used these online teaching tools with your pupils?

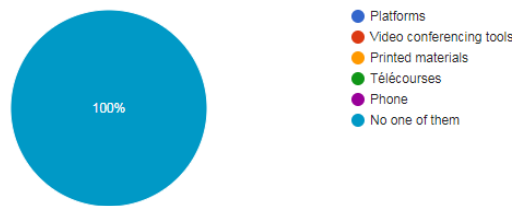


Figure 11. The use of teaching tools

We also asked whether the instructors used one or some online teaching tools with their pupils during the lockdown. Unsurprisingly, the answers were negative.

Figures 8, 9, 10, and 11 emphasize the digital illiteracy and digital divide between the administration and teaching staff, which consequently represented a massive challenge for distance learning.

Were you ready for the change? (face-to-face virtual teaching)?

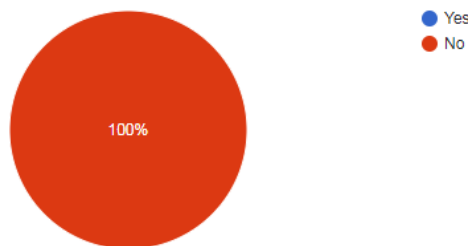


Figure 12. Be ready for distance teaching

As expected and obvious, neither the school nor the instructors were ready for the change, ready to use online teaching with the deaf pupils once the lockdown was imposed.

When we asked them whether they were ready to use online teaching, they all responded "NO," and the reasons came as follows:

- Face-to-face is crucial for deaf
- Parents have no equipment, and the school has no equipment and books
- It does not work with deaf
- Do not know how to use it, no idea
- It is impossible to teach them; they need complete attention
- No instructions were given to us. The administration did not talk to us. We were only -told to leave school. . .
- Total communication. PHOTOS, SIGN LG, facial presence attendance
- Technology equipment, logistics, connection to the internet
- No training, no information from the administration
- I am deaf, an instructor said
- Cannot keep his attention, need total communication, special need for every pupil
- Need complete attendance to manage pupils and class; equipment; internet connection.

CONCLUSION

The COVID-19 pandemic has had a profound impact on human history and culture. Students, especially those who are deaf, have been adversely affected by the radical shift in pedagogical approaches. We have made an effort in this qualitative and quantitative study to examine and analyze this pandemic's social, educational, and technological effects. In addition, we questioned the teachers who had previously stated that online education was

challenging. The study's findings can be summed up as follows. All these factors must be in harmony for distance learning to be adopted and successful:

- Adequate subject content knowledge
 - Technological technical skills
 - Specialized supporting resources for students with special needs
 - Appropriate pedagogical techniques for students with pathological language disorders
- These suggested recommendations could be helpful and useful:
- Set up policies and strategies for unexpected lockdown and missed learning;
 - Provide distance education for professional training, and online learning should be scheduled for teachers and school staff;
 - Supply teachers and deaf students with tablets and support them technologically and psychologically;
 - Design special educational applications for deaf people;
 - Provide professional development based on distance learning;
 - Involve the students in assessment and planning.

REFERENCES

- Ahmad-Ur-Rehman, M., Haq, I. U., Jam, F. A., Ali, A., & Hijazi, S. T. (2010). Psychological contract breach and burnout, mediating role of job stress and feeling of violation. *European Journal of Social Sciences*, 17(2), 232–237.
- Alsadoon, E., & Turkestani, M. (2020). Virtual classrooms for hearing-impaired students during the COVID-19 pandemic. *Romanian Journal for Multidimensional Education*, 12, 1-8.
- Baroni, F., & Lazzari, M. (2020). Remote teaching for deaf pupils during the Covid-19 emergency. In *Proceedings of the IADIS Conference on e-Learning*, Lisbon, Portugal.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. doi:<https://doi.org/10.1191/1478088706qp063oa>
- Fegert, J. M., Vitiello, B., Plener, P. L., & Clemens, V. (2020). Challenges and burden of the coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: A narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child and Adolescent Psychiatry and Mental Health*, 14(1), 1–11. doi:<https://doi.org/10.1186/s13034-020-00329-3>
- Gleason, C., Valencia, S., Kirabo, L., Wu, J., Guo, A., Jeanne Carter, E., . . . Pavel, A. (2020). Disability and the COVID-19 pandemic: Using Twitter to understand accessibility during rapid societal transition. In *The 22nd International ACM SIGACCESS Conference on Computers and Accessibility*. doi:<https://doi.org/10.1145/3373625.3417023>
- Hanjarwati, A., & Suprihatiningrum, J. (2020). Is online learning accessible during COVID-19 pandemic? voices and experiences of UIN Sunan Kalijaga students with disabilities. *Nadwa*, 14(1), 1–38.
- Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). *The difference between emergency remote teaching and online learning*. Retrieved from <https://bit.ly/3xGLOls>
- Jam, F. A., Akhtar, S., Haq, I. U., Ahmad-U-Rehman, M., & Hijazi, S. T. (2010). Impact of leader behavior on employee job stress: Evidence from Pakistan. *European Journal of Economics, Finance and Administrative Sciences*(21), 172–179.
- Jam, F. A., Mehmood, S., & Ahmad, Z. (2013). Time series model to forecast area of mangoes from Pakistan: An application of univariate ARIMA model. *Academy of Contemporary Research Journal*, 2, 10–15.
- Khan, S., Jam, F. A., Shahbaz, M., & Mamun, M. A. (2018). Electricity consumption, economic growth and trade openness in Kazakhstan: Evidence from cointegration and causality. *OPEC Energy Review*, 42(3), 224–243. doi:<https://doi.org/10.1111/opec.12130>
- Khan, T. I., Akbar, A., Jam, F. A., & Saeed, M. M. (2016). A time-lagged study of the relationship between big five personality and ethical ideology. *Ethics & Behavior*, 26(6), 488–506. doi:<https://doi.org/10.1080/10508422.2015.1055493>
- Kritzer, K. L., & Smith, C. E. (2020). Educating deaf and hard-of-hearing students during COVID-19: What parents need to know. *The Hearing Journal*, 73(8), 32. doi:<https://doi.org/10.1097/01.HJ.0000695836.90893.20>

- Liddell, S. K. (1980). *American sign language syntax*. The Hague, Netherlands: Mouton.
- Qazi, A., Raj, R. G., Tahir, M., Waheed, M., Khan, S. U. R., & Abraham, A. (2014). A preliminary investigation of user perception and behavioral intention for different review types: Customers and designers perspective. *The Scientific World Journal*, 2014, 1-9. doi:<https://doi.org/10.1155/2014/872929>
- Reimers, F., Schleicher, A., Saavedra, J., & Tuominen, S. (2020). *Supporting the continuation of teaching and learning during the COVID-19 pandemic* (Vol. 1; Tech. Rep. No. 1). Geneva, Switzerland: The World Bank.
- Roulston, K. (2001). Data analysis and 'theorizing as ideology'. *Qualitative Research*, 1(3), 279–302. doi:<https://doi.org/10.1177/146879410100100302>
- Shahbaz, M., Sherafatian-Jahromi, R., Malik, M. N., Shabbir, M. S., & Jam, F. A. (2016). Linkages between defense spending and income inequality in Iran. *Quality & Quantity*, 50(3), 1317–1332. doi:<https://doi.org/10.1007/s11135-015-0207-z>
- Smith, C., & Colton, S. (2020). Creating a youtube channel to equip parents and teachers of students who are deaf. *Journal of Technology and Teacher Education*, 28(2), 453–461.
- Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The philippine context. *Pedagogical Research*, 5(4).
- UNESCO. (2020). *COVID-19 in Palestine: How distance learning will help student continue education*. Retrieved from <https://bit.ly/3y7xFyZ>
- Viner, R. M., Russell, S. J., Croker, H., Packer, J., Ward, J., Stansfield, C., . . . Booy, R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: A rapid systematic review. *The Lancet Child & Adolescent Health*, 4(5), 397–404. doi:[https://doi.org/10.1016/S2352-4642\(20\)30095-X](https://doi.org/10.1016/S2352-4642(20)30095-X)
- Waheed, M., Kaur, K., Ain, N., & Hussain, N. (2016). Perceived learning outcomes from moodle: An empirical study of intrinsic and extrinsic motivating factors. *Information Development*, 32(4), 1001–1013. doi:<https://doi.org/10.1177/0266666915581719>
- World Health Organization. (2020). *Deafness and hearing loss*. Retrieved from <https://bit.ly/3N5fq1r>