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Meeting the Needs of Students with Hearing Impairment Amidst Covid-19 Pandemic: A Systematic Review

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Abstract: *This systematic review aims to determine how Special Need Educators address the educational needs of students with hearing impairments during the COVID-19 Pandemic. This review included 15 of 200 studies screened using inclusion and exclusion criteria from 2020 to 2021. The included studies were chosen from the Google Scholar database using the Publish or Perish software and organized using the PRISMA flow diagram. The synthesized data was examined using Braun and Clarke's six-step thematic analysis, which generated three themes: challenges faced by students with hearing impairment, development techniques and practices, and addressing educational needs, and Meta-theme- Pedagogy Development Program. Amidst the school and teachers' proposals and efforts to teach during the Pandemic, due to challenges, it was still completely inadequate. As a result, it is recommended that both schools and teachers provide more efficient and effective teaching pedagogies, as classes are now held in a face-to-face format to accommodate for the previous two years of distance courses, during which students with hearing impairments' needs were rarely met.*

Keywords: *Hearing impairment, special education needs, students during the COVID-19 epidemic, special educator pedagogy*

I. INTRODUCTION

The COVID-19 outbreak affected not only people's daily activities, businesses and global trade. According to Haleem (2020) but it also eliminated and hindered any in-person options for formal and informal learning. Thus, this leaves schools and institutions worldwide to opt for remote learning, in which the majority is delivered online (Alsoufi et al., 2020). The mode of online education is the delivery of learning resources via the internet for student-student and student-teacher interaction and for disseminating educational materials. With the development of technology-assisted learning, educators have begun utilizing online learning environments to encourage students' independent study and assessment (Sinclair et al., 2015). And true to this, students could continue learning during the Pandemic. Nonetheless, it was still difficult for teachers to build relationships with students, families, and coworkers while also adapting to unexpected circumstances, teaching in different manners, utilizing synchronous and asynchronous instruction, adapting to students' diverse learning styles, and evaluating them (Zamarro et al., 2021).

More so, Hearing Impairment Education was not an exemption to this. Throughout COVID-19 the HI education has faced a particular set of difficulties (Mantzikos 2020). Students with hearing impairment were formerly excluded from remote learning, although having the absolute right to information, because they were a difficult-to-manage group that needed more specialized educational approaches. Students with hearing impairment have generally been excluded from classes and isolated from teachers because they could not quickly respond to their educational demands due to social distancing measures.

Furthermore, it has been discovered that learners with hearing problems find it difficult to share information. These issues include the absence of lecture transcripts or captions, limited availability of sign interpreters, loss of visual cues, and problems with auditory signals brought on by facemasks (Schafer et al., 2020). The Pandemic has shown severe problems in e-learning systems for students with special needs that may need to be addressed, even if current literature has concentrated on enhancing accessibility for disabled students in higher education. The COVID-19 Pandemic created several difficulties and obstacles, which can be better overcome by focusing on them. The problem of transitioning to an entirely new method of distance learning and instruction was one of the main issues that students with impairments had to deal with (Smith, 2020). Students with impairments, in general, and deaf students, suffered the most from the tight requirements that all students had to follow (Valvi, 2020).

Baroni and Lazzari (2020) investigated the remote learning experiences of deaf students and found that translation, technical, and time issues were significant obstacles.

Furthermore, hearing impaired students have trouble decoding a language without linguistic guidance. Although inclusive tactics like giving written transcripts of lectures or captioned videos have supported students with online learning, the students struggle to understand them due to the complexity of written language (McKweon, 2019). This systematic review aims to explore how Special Need Educators address the educational needs of Hearing Impairment students during the COVID- 19 pandemic employing a meta-synthesis method.

II. MATERIALS AND METHODS

A. Research Design

The researchers employed a meta-synthesis design in researching if the Needs of Students with Hearing Impairment are met during the Covid-19 Pandemic. A meta-synthesis is a method of reinterpreting and reshaping existing qualitative findings to formulate an evidence-based interpretation of a phenomenon or process and arrive at a conceptual understanding (McClellan & Shaw 2005). It aims to explicate and consolidate results from different inter-connected studies.

B. Study Search Procedure

A scholarly electronic Publish or Perish software using Google Scholar as the database was used to identify the published papers in English language journals related to the Special Educators' Pedagogy In Meeting the Needs of Students with HI During the Pandemic . All of the studies relevant to the framework of teacher's pedagogy in meeting the needs of students with HI during the Pandemic published from 2020–2022 were all downloaded and examined. Moreover, *Hearing impairment, special education needs, students during the COVID-19 epidemic, and special educator pedagogy* are the keywords used in the Publish or Perish Software database in Google Scholar. It was deliberately chosen to gather information and data to accumulate facets needed for the meta-synthesis. PRISMA 2020 flow diagram was used by the researcher to organize the extracted data.

C. Inclusion/Exclusion Criteria

The inclusion and exclusion criteria provide the researchers with a foundation for consistently, dependably, and unbiasedly identifying the study population. As a result, it is more probable that study participants will have the qualities needed to fully answer the research question (Nikolopoulou, 2022). Included studies were selected based on inclusion criteria protocol: (a) studies conducted from 2020-2022; (b) must include studies related to Special Education Teachers handling children with hearing impairment; (c) must be during the Covid-19 pandemic (d) must focus on Special Educator's challenges and pedagogy used in meeting the needs of students with hearing impairment; (e) must focus on adaptation and effectiveness of new teaching strategies; (f) mainly written in the English language; (g) must be found in Google Scholar. Chosen studies were screened using the set inclusion criteria. The figure below shows PRISMA as the search strategy of the included studies.

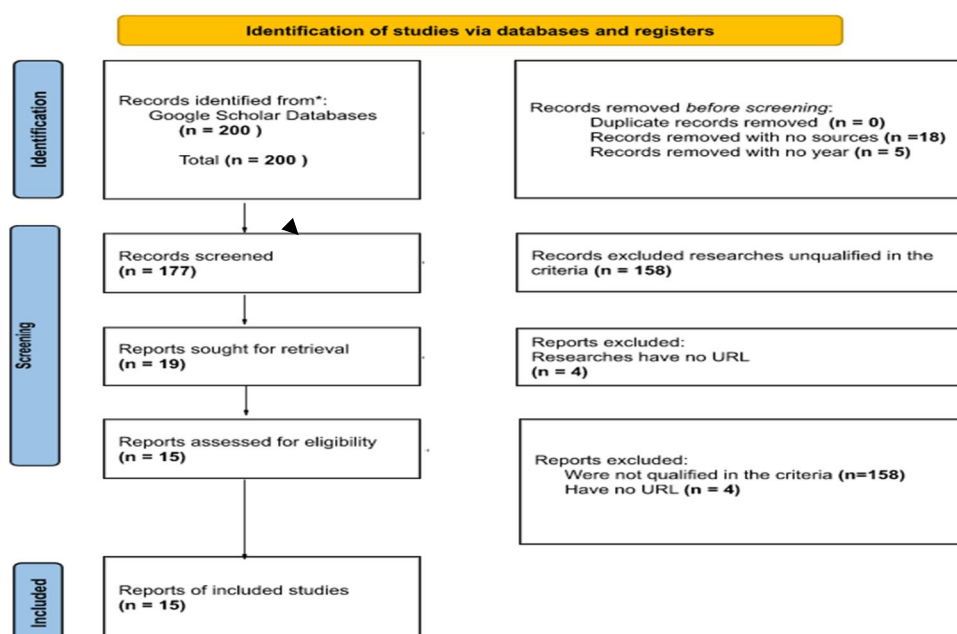


Figure 1. Identification of studies via databases and registers using PRISMA

There were three (3) stages of the research paper selection using the PRISMA Flow Diagram. The three stages are the following: Identification, Screening, and Included. In the identification stage, Two Hundred (200) studies were identified in Google Scholar Database on the initial screening using the Publish or Perish software. Eighteen (18) studies were excluded because the studies have no sources and Five (5) studies were removed because the studies have no stated year resulting in One Hundred and Seventy-seven (177) in the identification stage.

There were two sub-stages in the screening stage. On the first substage, One Hundred and Fifty-eight (158) studies were excluded because the studies were not qualified in the criteria and did not meet the researchers' requirements, resulting in Nineteen (19) studies remaining. On the second substage, an additional four (4) studies were also excluded because the studies have no URL and this resulted in Fifteen (15) studies on the final substage of the screening stage.

D. Data Analysis

The identification of recurring themes was done using thematic data analysis. The results were summarized into various themes. Thematic analysis utilizing the Clarke and Braune (2017) technique was used to analyze the chosen data. According to Caulfield (2020), thematic analysis is an approach for classifying, examining and interpreting patterns of themes in qualitative data. The following are the guides in making a thematic analysis, familiarization, producing initial codes, searching for themes, implicating themes, defining themes, and generating the report.

III. RESULTS AND DISCUSSIONS

Meeting the needs of the students with hearing impairment amidst Covid- 19 conducted studies were used to generate initial codes, and 15 studies were considered by the researchers in the meta-synthesis. The article, the title of the study and its authors, the year it was published and the generated initial codes used for thematic analysis are shown in Table 1 below.

Table 1. Studies focusing on Meeting the Needs of Students with Hearing Impairment Amidst Covid-19

Article	Authors and Year of Publication	Generated Initial Codes of the Meeting the Needs of Students with Hearing Impairment Amidst Covid-19 Programs
1	S Ashraf, M Jahan, M Saad, 2021	<ul style="list-style-type: none"> • A smart syllabus was offered to SWHI during the pandemic. • Lectures were uploaded on a daily basis • School provided technical help and teachers used sign language along with verbal communication • Teachers have reported that they ensured the use of hearing aids
2	IA Krishnan, G De Mello, SA Kokaal, 2020	<ul style="list-style-type: none"> • Hearing devices are unable to pick up speech or sounds during online lessons. • Students were easily disrupted • Students were not familiar with the online devices • The students were emotionally affected
3	NA Drajadi, R Junhita, B Ikasari, 2021	<ul style="list-style-type: none"> • Teachers are obligated to use a multimodal approach
		<ul style="list-style-type: none"> • Online learning has limited direct engagement with other learners • Students felt uninterested and unmotivated • Students felt unconfident in their ability to use sign language

4	O Alawaje, 2021	<ul style="list-style-type: none"> ● Faculty in some educational institutions were required to record the lectures ● Online learning creates an interactive and accessible environment ● Online learning made learning much more convenient and concrete
5	CN Mantzikos, CS Lappa, 2020	<ul style="list-style-type: none"> ● Remote teaching for teachers and distance learning for all students. ● Technological equipment was given to students and schools that really needed it ● There is a lack of collaborative teaching ● No appropriate modifications and adaptations to the teaching materials
6	RF Pradipta, M Efendi, A Hudaee, 2021	<ul style="list-style-type: none"> ● ICT correlated with the learning process of hearing-impaired students ● Using computer information technology media ● Teachers have the ability to use ICT
7	A Taddei, EA Lapezae, 2021	<ul style="list-style-type: none"> ● Students were inaccessibility of resources available at school ● Adapting texts to the understanding capabilities of the pupil ● Hypertextual and hypermedia technologies ● Students were lack of assistive technologies
8	R Swanwick, AM Oppong, YN Offeiãe, 2020	<ul style="list-style-type: none"> ● Disruption to day-to-day interaction with other deaf people ● Children have been disconnected from peer socialisation ● The deaf community has been excluded
9	D Pacrez-Jorge, MC Rodraguez-Jimacnezael, 2021	<ul style="list-style-type: none"> ● Teachers did not receive specific training in hearing impairment ● Teachers are not prepared to respond to hearing impairment ● There was an insufficient training assessment for deaf students
10	C Atar, A– Aslan Bagci, H Bagci, 2021	<ul style="list-style-type: none"> ● Visual materials are used ● Mobile applications used for interacting and connecting ● Use of different media platforms
11	B Acain, AGC Ortiz-Ocariza, VI Cabales, RG Matutinaoael, 2021	<ul style="list-style-type: none"> ● Students lack of equipment for online class ● Students lack of access to fast and reliable internet connection ● Technological issues ● Do not have money to buy load ● The insufficient of knowledge on how to use the

		online platforms
12	A Madhesh, 2021	<ul style="list-style-type: none"> • Educational programs were intended for hearing students • E-portal for the Deaf students
13	NAM Nasir, H Hashim, SMM Rashidael, 2021	<ul style="list-style-type: none"> • The students believed that their smartphones and laptop are the important tools • Using Video Chats • Mobile technologies
14	P Merava, P Beaˆo, 2022	<ul style="list-style-type: none"> • Communication difficulties are linked to social, emotional, academic, and career challenges • Reduced access to vital healthcare services • Difficulty engaging in auditory communication with people wearing masks
15	P Yunisari, U Kasimael, 2021	<ul style="list-style-type: none"> • Deciding the Approach and Method used for teaching deaf students. • Unclear pronunciation or articulation • Preparing learning media • Depend the teaching on authentic and visual media creatively creating a handout • Only teach students who live near the school

The final collection of fifteen (15) studies included only fifteen (15) journal articles. As shown in the table, the initial codes for meeting the needs of students with hearing impairment amidst covid-19 programs. The generated themes codes were analyzed using thematic analysis, which emerged three (3) themes. The themes generated are the following: (1) Addressing Educational Needs; (2) Challenges Faced by Students with Hearing Impairment; and (3) Development Techniques and Practices. The three (3) themes were discussed below.

A. THEME 1. Addressing Educational Needs

Every student is unique. That is what distinguishes and interests pupils as individuals. Students come from various backgrounds and experiences, which influence how they respond to classroom activities and classroom management processes. Although schools are supposed to be safe and secure environments, they frequently create possibilities for student-on-student aggression and improper relationships among kids (Marzano, Gaddy, Foseid, Foseid, & Marzano, 2005).

Teachers adapt teaching methods to meet the needs of different students in the same manner that they adjust education to cater different learning styles (Evertson & Emmer, 2009). For learners such as those with hearing impairment, an educational plan can be established in coordination with teachers, parents, speech therapists, and audiologists (professionals who identify and treat hearing issues).

This entails creating an individualized education program (IEP) or plans to assist children in reaching their full potential. A classroom assistant or interpreter may be included in the plans to help with communication, and many more.

Moreover, the following are the desirable strategies to support the needs of HI students: (1) Make seating changes, (2) Minimize background noise when possible, (3) Use an FM system, (4) Face students when you speak, (5) Use lots of pictures, graphics, and text labels, (6) Use technology to make learning easier, (7) Have a plan for missed instruction, assignments, and testing, (8) Encourage participation. By addressing special needs and providing assistance as required, you may help students with hearing loss learn as effectively as possible (Inverso, 2021).

B. THEME 2. Challenges Faced by Students with Hearing Impairment

The COVID-19 pandemic has been exceptionally difficult for challenged students, particularly those with hearing problems. Many students with special needs were physically, mentally, and academically affected by the Covid-19, and their interactions have been hindered. According to Krishnan, Isai A., et al. (2020), students with hearing impairment encounter the following issues: lack of hearing devices, disturbance in an understanding of the lesson, unfamiliarity with online gadgets, and emotional distress during online sessions.

It is also found that there have yet been no appropriate modifications and adaptations to the teaching materials for the hearing impaired students according to G Yazcayir, H Gurgur (2021). Furthermore, according to O Alawajee (2021) educational programs were designed for hearing students without any consideration given to the needs of Deaf students which results in students being unmotivated to learn, and some had to drop out. The needs of the students with hearing impairment were not addressed and learning during the Covid-19 for them was far more difficult than that of the hearing students.

C. THEME 3. Development Techniques and Practices

Due to the rapid transition from face-to-face classes to online classes, special education teachers from different educational institutions were forced to develop new techniques and applications to meet the needs of students with hearing impairment. Developed Techniques and practices refer to the way special education teachers conduct lessons and instructions in virtual classrooms. Education must continue. Special education teachers who work with students who have hearing impairments recognize the needs and way of learning of each student as well as the task's requirements, keeping in mind that special education teachers have shared decisions concerning to techniques and procedures for students with hearing impairments. Adapting to the online learning environment is the most crucial element in the context of distance learning. (eLearning Industry, 2020). Education is being provided during COVID-19 via distance learning, which has been made accessible by technology. (U.S. Department of Education, 2020). Instead of changing the method that education was previously delivered, the goal is to discover a solution to continue educating amid of a pandemic.

The following strategies and practices ought to be used to maintain the annual requirements for students with HI in the educational process.: (a) adaption to virtual learning; (b) multimedia approaches; (c) systematic vocabulary instruction (d) using available technology and services; (e) using meeting platform tools; (e) using of captions; and (f) alternate communication methods. With the ongoing use of these methods and practices as well as adequate assistance for special education teachers, it will be possible for them to deliver services to students that are effective in an online environment, and students with HI will be given proper accommodation and effective support for them to have the best access to education.

D. META THEME: Pedagogy Development Program

A teaching method known as pedagogy involves teachers dispensing both theory and practice. The teachers' instructional beliefs influence their pedagogy, including their understanding of cultural diversity and various learning preferences. The teaching methods used, including both theory and practice, are referred to as pedagogy. It connects the two, culture and instruction. Building on learners' past knowledge while also trying to improve their abilities and behaviors is the main objective of education. Shirke (2021) asserts that pedagogy enables students to fully comprehend a subject and supports them in using their knowledge outside of the classroom.

Teaching pedagogy may represent the educator's comprehension of how students learn. Teachers focused on adjusting the curriculum to meet each student's individual needs. Classroom engagement between teachers and students is necessary to make a significant impression on students' thoughts. Regardless of the teaching style, it is the teacher's responsibility to guide the student toward the appropriate information. Additionally, the teacher should be a strong role model for the target language and provide clear knowledge of how the students develop as learners.

IV. CONCLUSION & RECOMMENDATIONS

The teachers' initiatives and efforts to sustain teaching during the pandemic were insufficient. As classes are now held in a face-to-face setting, it is recommended that both schools and teachers provide more efficient and effective teaching pedagogies: (a) Classroom Adaptations (b) Communication Considerations (c) Visual Strategies and Curriculum Accommodations (d) Regular Evaluation of Progress (e) Expect Success to make up for the previous two years of online learning, in which the needs of students with hearing impairments were rarely met.

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