

The Impacts of Online Learning during Covid-19 to Hearing Impaired Students' Comprehension

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Abstract

Covid-19 has been affecting all walks of lives, particularly students. Students are required to switch to online learning in the two years period of this pandemic, increasing the loads of emotional burden on their education especially to the special needs students. One of them being the hearing impaired students, who are facing significant amount of difficulties in adapting to the new style of learning. This study aims to investigate the effect of online learning during Covid-19 to hearing impaired students' comprehension skill. The differences in approaches taken and ability to adapt to online learning are needed to be taken into consideration to evaluate the effects of online learning to comprehension skill. An online survey that consists of three sections was distributed through random sampling to special needs teachers. A total of 35 respondents have completed the survey. The results found that there are approaches taken by the teachers to teach and enhance hearing impaired students' comprehension skill which include sign language and making videos for online learning. It can also be found that online learning during Covid-19 has affected hearing impaired students negatively. The negative effects on hearing impaired students are the significant drop in students' reading task performance, deterioration of prior knowledge usage and the decline in average achievement level in completing reading comprehension tasks.

Background of The Study

Covid-19 has been affecting all walks of lives, particularly students. Students are required to switch to online learning in the two years period of this pandemic, increasing the loads of emotional burden on their education especially to the special needs students. Special needs is defined as certain requirements caused by various behavioural and learning difficulties or even physical and mental disabilities. One of the special needs students are the hearing impaired students. The hearing impaired (HI) students particularly are facing significant amounts of difficulties in adapting to the new style of learning. In language learning, reading skill is one of the key elements to be fluent in the language targeted. However, HI students lack the ability to perform reading normally as they are accustomed to sign language and eye-hand coordination type of learning, often failing to transform written information into sign language that consisted of different phonological codes from speaking language (Meadow & Mayberry 2001). As per 2018, there are 160,000 HI students in Malaysia covering all types of deafness. HI has been classified into several classes consisted from mild, moderate, severe and profound

hearing loss, being from losing 20 to 40 decibels, 41- 60 decibels, 61 to 80 decibels as well as losing more than 81 decibels respectively. Even though there are efforts of facilitating to HI people such as cochlear implant, the development of comprehension skill for HI students are still low, affecting their reading proficiency later in life (Agunda, 2016).

In Malaysia, the issue of comprehension skill among HI students is often overlooked upon. This is because, being in the minority group of people often result in them being left out of the discussions regarding learning methods. According to Siew et al (2007), HI students are being exposed with societal education as well as public awareness about the engagement with hearing people in special schools and for those with substantial hearing losses, they can be attending regular schools to receive their basic education. Even when having the same mental capability as a hearing person, hindrances are inevitable in terms of the teaching methods used by teachers. The transition from face-to-face learning to online learning may be causing a sense of confusion and not useful considering their adaptability to the situation (Hisyamuddin et al., 2013). The differences of perceiving information such as the complex vocabulary as well as the early stages of learning how to sign requires extra attention, especially with children that are born with hearing parents. The struggle of having different first language between both hearing parents and non-hearing children, sign language being the first language for them, can cause a sense of exclusion, and learning process can be difficult to be carried out in online learning setting. Therefore, this research will be focusing on observing the impacts of online learning during Covid-19 to hearing impaired students' comprehension skill and to investigate the methods that can be implemented for the students to strengthen their comprehension skill.

In reality, HI students have been struggling with online learning difficulties during Covid-19. This statement is supported by the claim from Krishnan et al (2020) saying that the new way of living in Malaysia with social distancing and staying at home have been affecting a lot of impaired students, particularly HI students. This is because they are inclined to have different approach to learning which is by using visual aids. Impairment is defined as the challenge of physiological function that is caused by absence of certain congenital condition, and disability is the hindrance caused by environmental drawbacks (World Health Organization, 2009). For hearing impaired students, Covid-19 means that they have to stay home and find other methods of learning to enhance their reading comprehension, demanding teachers and parents to create customised educational programs that can cater to their cognitive skill during the learning process (Krishnan et al., 2020). The lack of proper guide especially from the parents can cause them to feel discouraged and affecting their mental health as they cannot find the suitable platform to learn.

Ideally, as the technologies have been developing rapidly, it is giving various choices of learning methods to those doing online learning. Multimedia based methods such as video streaming and social tools have been are to be suited to their needs and usability and the community needs to find the appropriate methods in order to create an inclusive online learning environment for HI students (Hisyamuddin et al., 2013). Those with hearing impairment faces daily social adaptability difficulties, including in their education during the period of Covid-19. The differences of behaviour characteristics, sensory and physical can make it difficult for HI students to obtain knowledge learned compared to others who are not affected by loss of hearing (Krishnan et al., 2020). Nortajuddin (2020) also mentioned that those with various types of learning difficulties will feel cut out whenever the online learning direction is inaccessible for them, looking from the communication methods, and on hand materials. Agunda (2016) stated that a lot of reading problems among HI students resulted in low

confidence level, limited vocabulary and having difficulty in deciphering meaning of written words. Thus, this study is to investigate the depth of challenges faced by hard of hearing students during online learning, the effects of online learning on their comprehension skill and the strategies taken by the teachers and students to enhance their reading comprehension. Therefore the main aims of this research are; 1) to determine approaches done by teachers to enhance hearing impaired students' reading comprehension skill during online learning; 2) to investigate the effects of online learning during Covid-19 to hearing impaired students' comprehension skill.

The researcher will be referring to the Field Theory of Pierre Bourdieu and Cognitive Development Theory by Jerome Bruner to see whether the hearing impaired students' methods of learning can show the differences and affect their comprehension skill in online learning during Covid-19. According to Bourdieu (2013), social existence is what defines reality, and social relationship requires a capital that can provide accessibility to external resources to a better network and communication. In a way, he implied that for hearing impaired students, it is essential to have significant involvement in an environment that can ensure the optimization of learning comprehension skill. Hence, this research will focus on the approaches taken by the teachers to maintain and develop hearing impaired students' comprehension skill.

Literature Review

According to UNICEF (2020), the Covid-19 pandemic has been affecting all walks of lives all over the world as well as Malaysia including families with disabled children in terms of access to the education and the consequences of Movement Control Order (MCO) to their mental health and study performance. Disabled children suffer from several consequences such as can no longer attend their specific therapy or study session, causing them to develop behavioural problems at home due to sudden change of daily routine from being able to maintain certain social activities to stay at home. In the context of HI students, there are also reports of parents having difficulties to supervise their children's studies during MCO, resulting to more tension between family members and bad effects to the children themselves as for them, adjusting to online learning can be a problem especially for their learning ability development. There are also other problems faced by them including lack of information resources as for the children that are resided in remote villages that have limited opportunities for online learning, or having financial problems to begin with. Online learning is not an option for certain society with different kind of hindrances, and more with disabled children especially those who have hearing impairment are at the utmost disadvantage, along with other communities while fighting the pandemic and getting to have a normal life again.

A study done by Bickham (2015) titled Reading Comprehension in Deaf Education: Comprehension Strategies to Support Students Who are Deaf or Hard of Hearing and got several results of methods used by hard of hearing students to enhance their comprehension skill by doing interventions and collecting data by doing surveys. She conducted the research with several categories of participants in the same school, with a large range of ages starting from 18 months to 21 years old, which majority are deaf with or without additional learning disabilities. In the study, the strategies that were chosen by the students and perceived as helpful are related to visual aids such as adding pictures to text, story maps and summarizing. It is believed by both the teachers and students that these strategies are helpful in enhancing their reading comprehension. Meanwhile, the strategy of close reading is not chosen by the students but is recommended by only the teachers, saying that "we used this activity all the

time in classroom with the students” (Bickham 2015). There are clashes between the methods used by the teachers and students while they are doing self-learning, and some additional methods including building general knowledge and pre-teaching vocabulary.

According to Hisyamuddin et al (2013), online learning can be the most frequently used education method but may not be useful to HI students due to the lack of adaptability between the students and the learning method. They conducted the study to observe the needs of the students, later developing a new system of online learning platform that can provide better usability to the students. There are several results regarding the development of online learning platform that are found and are suitable to be used to enhance hearing impaired students’ comprehension skill during online learning. They are focused on the demands and adaptability of the students during online learning in order to learn effectively as well as the technology used are to be compatible with the approaches selected such as video conferences, text adaptation and social tools. They stated that various interface during online learning plays an important role and can stimulate the HI students to participate more, at the same time enhancing their performance as well as adapting to the change of learning method. A different approach done by other researcher which is auditory-verbal therapy (A-VT) during online learning is also helpful to the students that still have the background knowledge of their language prior to losing their hearing.

In studying the reading comprehension among students, one of the theories learned is the schema theory, knowing that knowledge existed in forms of units. Schemata—a generic form of knowledge that focuses on a topic as a whole form—is related to the language acquisition in terms of differences of contexts while conveying information. According to Bickham (2015), the role of schemata is vital in helping students to develop better reading comprehension. The study also stated that students that have limited knowledge of a topic, resulted in facing hindrances to getting new knowledge through reading skill. By having a wide background knowledge for various topics, students will have better comprehension even when they have different disabilities.

First language acquisition plays a bigger role in guiding HI students going through their early stages of lives. Children with hearing impairment consider sign language as their first language, and those who have hearing parents may have several difficulties to sustain an effective communication flow in their daily conversations (Agunda, 2016). However, a study showed that significant percentage of parents did not know how to sign, using only basic and limited sign language knowledge, and using speech even when knowing that their children cannot hear (Mukari et al., 1999). This shows that the difference of first language can be barrier to the children early childhood education, affecting their language knowledge later in life. Parents are encouraged to learn sign language to boost their children’s learning surrounding, and the ability of learning also differs following the stages of hearing loss that the children suffer. For children that wear hearing aid, it might be possible to acquire speaking language and have faster development of reading comprehension compared to those that have severe hearing loss and require other methods of learning their first language.

For the students with hearing loss, online learning during Covid-19 can be another drawback to their education. Even though technologies have made their advances towards more adaptable learning environment that caters to most of the student categories, this can be the opposite for the HI students. From a study conducted, the results regarding challenges of online learning during Covid-19 are emotional problems, unable to comprehend online lessons, unfamiliarity to online gadgets as well as the disadvantages of using hearing aids (Krishnan et al., 2020). From the same study, the HI students find that they are perceived as a burden, and

not expected to contribute actively in the society due to their disability. If there is no further research done extensively, it will be harder to develop better education system to cater to special needs students to refer to especially during this pandemic period.

Khairul et al (2018) supported the statement of the lack of equality in education for the disabled in Malaysia. They stated that “even though they are being educated, they are facing hindrances to their participation and require ways to get recognition in today mainstream setting”. This is due to the fact that the sign language support and management division is not seen enough, and inclusion of HI children in society is important following the advancement of technologies. Even when medical services regarding this particular community has develop, but the numbers of specialist teachers that can cater to this flow of education in mainstream schools are lacking, and various other reasons that being seen as the barriers for the HI children to get proper education in normal society such as limited circle of society that can enjoy the privilege of technology of cochlear implant or hearing aid for those who have mild deafness. The exclusion risk is bigger than the inclusion advantage, and should be brought into the spotlight on trying to solve this problem.

Research Methodology

As the study is to observe the effects of online learning to the hearing impaired students, it is more convenient to use survey method to fulfil the limitations acquired by the researcher by the time this study is conducted. The survey questionnaire consisted of both qualitative and quantitative designs, as it is contained numerical and non-numerical statistic. The questionnaire contained three different sections which were Section A, B and C that have multiple choice questions options, Likert scale options and short answer questions that can help in answering both research questions the researcher had. This study was conducted with the special needs teachers that teach special needs students and have experiences with teaching hearing impaired students. The sampling technique of this study is random sampling where the questionnaire was distributed through Whatsapp Messenger and Instagram story post. The survey was distributed by the researcher with the goal of finding special needs teachers regardless of their workplace to answer the questionnaire and the Google Form link was distributed with an announcement message.

The questionnaire constructed was adapted from existing surveys which were Agunda (2016); Coman et. al (2020) titled Reading Strategies Adopted By Learners With Hearing Impairments To Enhance Comprehension In Special Primary Schools as well as Online Teaching and Learning in Higher Education During The Coronavirus Pandemic: Students’ Perspective respectively. The questionnaire consists of three different parts which were Section A, Section B and Section C. The first part consisted of the demographic section (Section A), teachers’ knowledge in special needs education and online learning platform (Section B) and teachers’ evaluation of how effective online learning sessions to students’ comprehension skill (Section C). The questions in Section B and Section C will be able to answer the questions in this research.

Demographic Profile of the Respondents

A total of 35 respondents completed the questionnaire. The researcher was able to reach the targeted age goal by having all of the age goal mentioned in the questionnaire fulfilled.

For the gender, 74.3% (n=26) from the respondents were recorded as female, while 25.7% (n=9) of the sample were male. About the age of the respondents, 21-25 years old teacher take the most numbers in percentage which was 48.6% (n=17), 31.4% (n=11) of them being the 26-30 years old teachers, 14.3% (n=5) of them were the teachers that aged 31-35 years old, and

lastly 5.7% (n=2) of them being the teachers with the age from 36-40 years old. From the result, 62.8% (n=22) of teachers obtained a Degree in Education. Then, 22.8% (n=8) were graduated with Postgraduate Diploma in Education (DPLI), 8.6% (n=3) hold a Master degree; 5.8% (n=2) have a Diploma in Education.

Result

Findings on RQ1: What are the approaches taken by the teachers to teach and enhance hearing impaired students’ reading comprehension skill during online learning?

Section B of the questionnaire was constructed with the aim to answer first objective of the research that is to determine approaches done by teachers to enhance hearing impaired students’ reading comprehension skill during online learning. Based on the data analysis, an amount of 85.7% (n=30) of the respondents agreed that hearing impaired students required special learning resources in order to have effective online learning process.

Hearing impaired students require special learning resources
35 responses

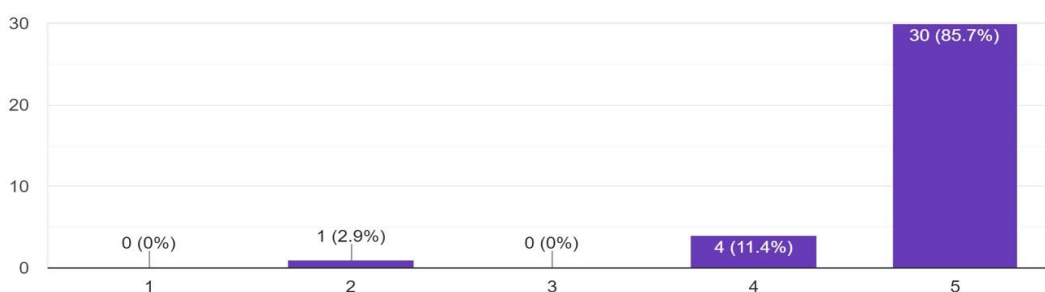


Figure 1: The frequency of respondents on hearing impaired students’ requirement on special learning resources

From Figure 1 above it shows that the majority of the respondents which is 85.7% (n=30) strongly agree with the statement mentioned in the chart itself. The other answers are 11.4% (n=4) of the respondents agree to the statement and 2.9% (n=1) of them answers disagree on the statement of hearing impaired students require special learning resources.

I have used online platforms to teach hearing impaired students even before Covid-19
35 responses

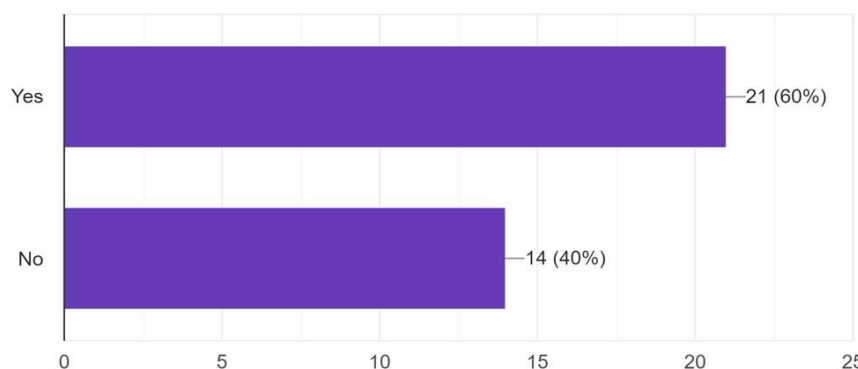


Figure 2: The frequency of respondents’ awareness on the usage of online platforms before Covid-19

From the Figure 2 above, 60% (n=21) of the respondents are aware of the presence of online platform and using it for hearing impaired students. Another 40% (n=14) responds with no, meaning that they did not use online platforms for teaching hearing impaired students.

Tick the online platforms that you use to teach hearing impaired students online BEFORE Covid-19
(You can select more than one answer below)

35 responses

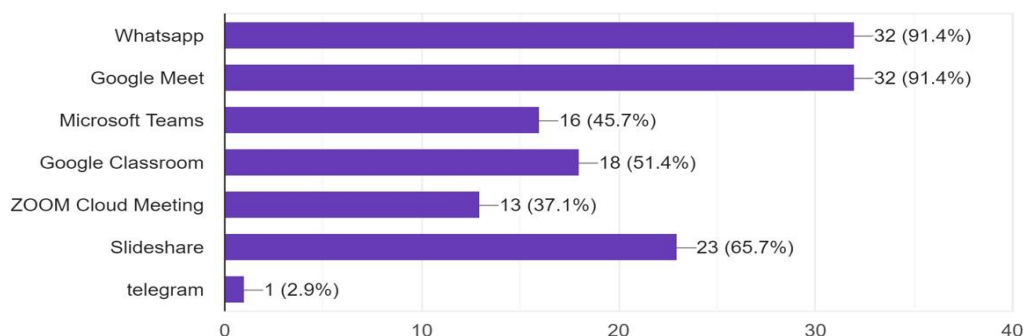


Figure 3: The online platforms used by the respondents to teach hearing impaired students BEFORE Covid-19

Figure 3 shows the distribution of respondents' answer to which online platforms they used to teach hearing impaired students before Covid-19. The majority of the respondents used Whatsapp Messenger with the percentage of 91.4% (n=32) as well as Google Meet with the same numbers while 45.7% (n=16) of the respondents opted for Microsoft Teams. Other than that, 51.4% (n=18) of them also used Google Classroom as one of their online platforms to be used before Covid-19, and 37.1% (n=13) of the respondents used ZOOM Cloud Meeting as their platform. Lastly, an amount of 65.7% (n=23) of the respondents chose to use Slideshare as an additional visual aid for the hearing impaired students to use, and 2.9% (n=1) used Telegram as a bigger platform to teach hearing impaired students.

Table 1

The distribution of methods used by the respondents to teach comprehension skill to hearing impaired students online DURING Covid-19

What are the other methods you use to teach reading comprehension to hearing impaired students online DURING Covid-19?	Absolute frequency (n=35)	Percent(100%)
Make videos	15	42.9%
Sign language	9	25.7%
Worksheets	5	14.3%
Pictures	1	2.9%
Texts	4	11.4%

From the Table 1 it can be seen that almost half of the respondents preferred visual type of learning resource to be given to hearing impaired students, with 42.9% (n=15) of them wrote making videos as their method to teach hearing impaired students. Other than that, a percentage of 25.7% (n=9) of them opted to using sign language during online learning to make sure they can convey as much information they can to the students. Next, 14.3% (n=5) of the respondents wrote worksheet as their method to give tasks to the hearing impaired students, and lastly texts and pictures were also chosen as the methods to aid hearing impaired students with 11.4% (n=4) and 2.9% (n=1) respectively.

Findings on RQ2: What are the effects of online learning during covid-19 to hearing impaired students' comprehension skill?

This research question is to answer the second objective of the study that is to investigate the effects of online learning during Covid-19 to hearing impaired students' comprehension skill.

Do the students use their prior knowledge as an aid for reading comprehension in online learning DURING Covid-19?

35 responses

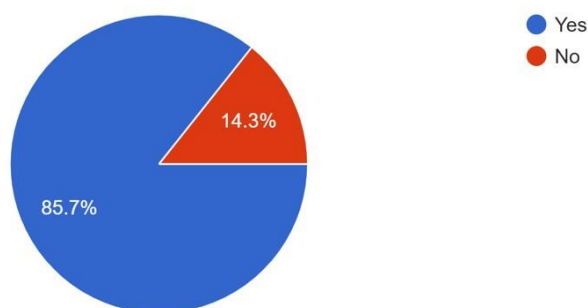


Figure 4: The percentage of students' usage of prior knowledge as an aid for reading comprehension during Covid-19

Figure 4 shows that 85.7% (n=30) of the respondents confirmed that their students have used their prior knowledge as an aid for reading comprehension in online learning, meanwhile 14.3% (n=5) of them said that the students have not used their schemata as an aid during online learning.

Do the hearing impaired students who sign well perform better in reading tasks during learning BEFORE Covid-19?

35 responses

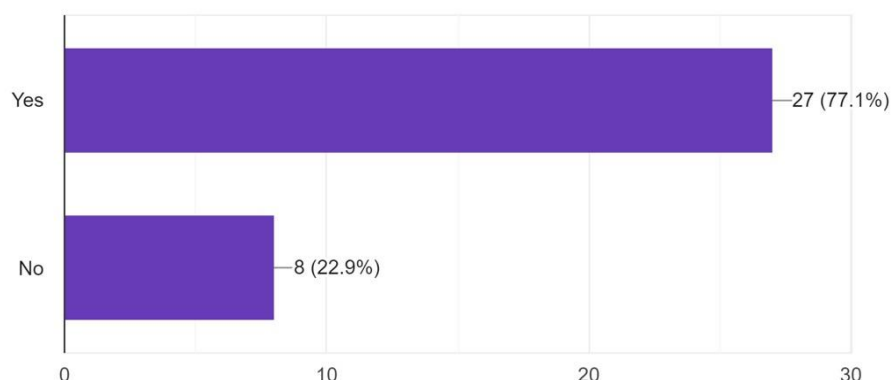


Figure 5: The percentage of students' performance in reading tasks during learning before Covid-19

From the Figure 5 above, 77.1% (n=27) of the respondents answered yes with the implication of their students that can sign well had perform better in reading tasks during learning before Covid-19, while the minority of them with the percentage of 22.9% (n=8) choose no.

Do the hearing impaired students who sign well perform better in reading tasks in online learning DURING Covid-19?

35 responses

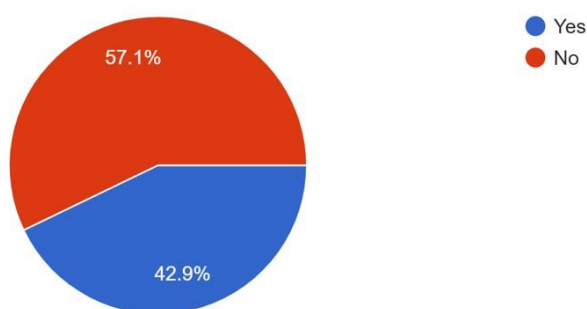


Figure 6: Percentage of students' performance in reading tasks in learning during Covid-19

In the pie chart above, it shows that 57.1% (n=20) of the respondents find that their students that sign well managed to perform better in reading tasks compared to their friends who lack in sign language, and 42.9% (n=15) of them choose no.

How do hearing impaired students respond to reading comprehension questions BEFORE online learning?

35 responses

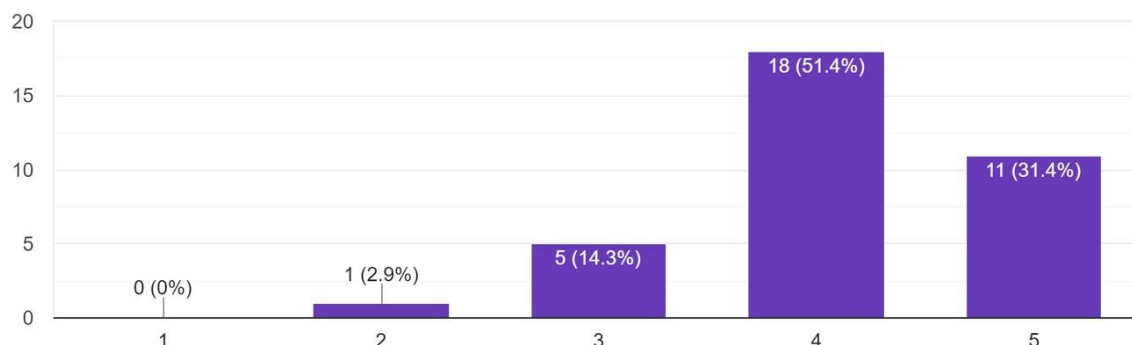


Figure 7: Distribution of respondents' answer on hearing impaired students' ability to respond to reading comprehension questions before online learning

Based on the Figure 7 shown, it can be seen that 51.4% (n=18) of the respondents said that their students responded well to reading comprehension questions, while 31.4% (n=11) of them have students that answered reading comprehension questions very well. Meanwhile, 14.3% (n=5) of them are being neutral towards the question, and 2.9% (n=1) of them responded that the students reacted to the questions poorly.

How do hearing impaired students respond to reading comprehension questions DURING online learning?

35 responses

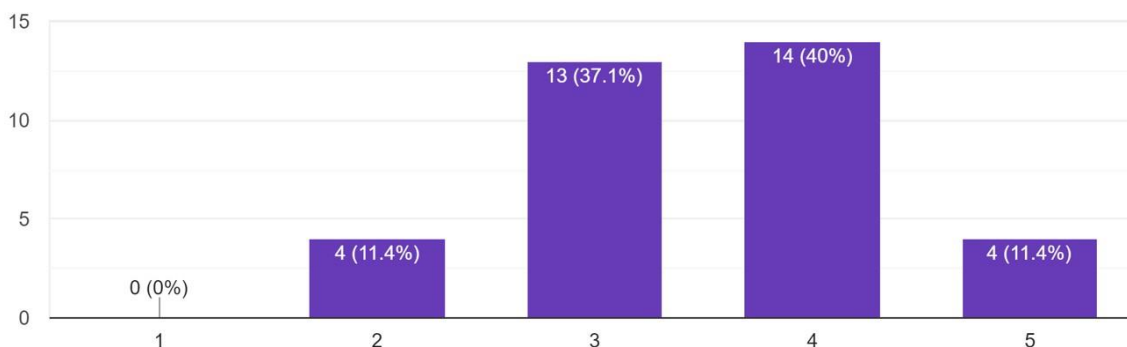
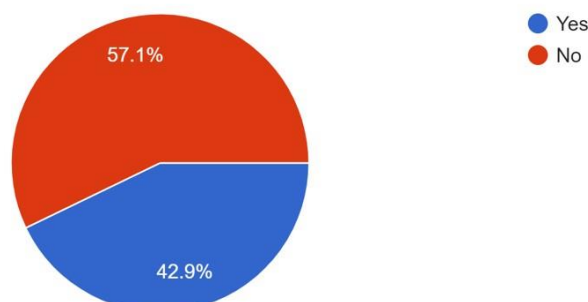


Figure 8: Distribution of respondents' answer to hearing impaired students' response to reading comprehension questions during online learning

In Figure 8, 11.4% (n=4) of the respondents answered that the hearing impaired students reacted poorly to reading comprehension questions during online learning, and 37.1% (n=13) of them have natural attitude to the question. On the other side, 40% (n=14) of them said that their students responded well to the reading comprehension questions, and the other 11.4%

Do you see the improvements of their comprehension skill during online learning based on the tasks given to them?

35 responses



(n=4) said that the students have taken reading comprehension questions very well during online learning.

Figure 9: Percentage of respondents' answer to the improvement of hearing impaired students' comprehension skill during Covid-19

Figure 9 shows that 57.1% (n=20) of the respondents say yes to seeing the improvement of their hearing impaired students' comprehension skill improvement during online learning, while 42.9% (n=15) of them did not see any improvement on the students.

What is their average achievement level in reading comprehension skill BEFORE online learning?

35 responses

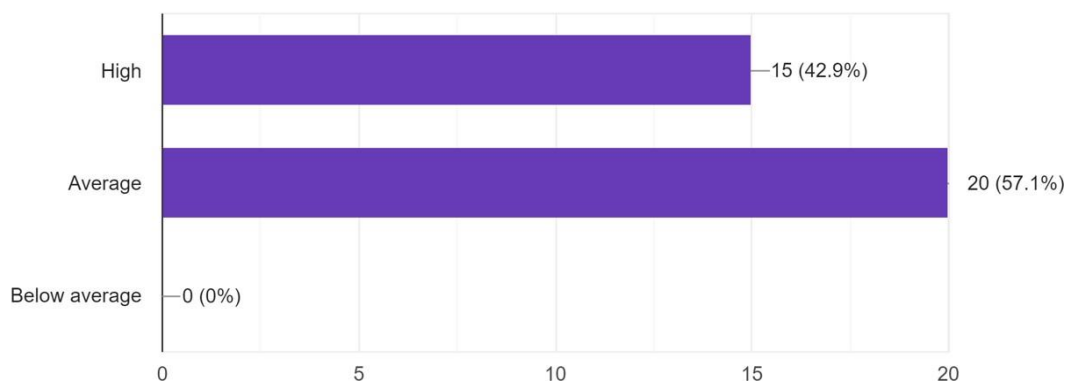


Figure 10: Distribution of hearing impaired students' average achievement level in reading

In Figure 10, 42.9% (n=15) of the respondents answered that their students have high average achievement level in reading comprehension skill before online learning, meanwhile 57.1% (n=15) of them responded with average. No one selected the below average answer option in the Google Form.

What is their average achievement level in reading comprehension skill DURING online learning?

35 responses

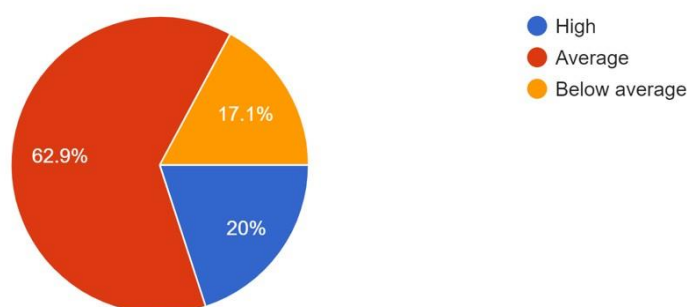


Figure 11: Percentages of respondents' answer on hearing impaired students' average achievement level in reading comprehension skill during online learning

From the chart, it appeared that 62.9% (n=22) of them said that their students have average achievement level in reading comprehension skill, while only 20% (n=7) of them have high average achievement level. Meanwhile, 17.1% (n=6) of them voted for below average.

Compared to face-to-face learning sessions, the concept of online to you is:

35 responses

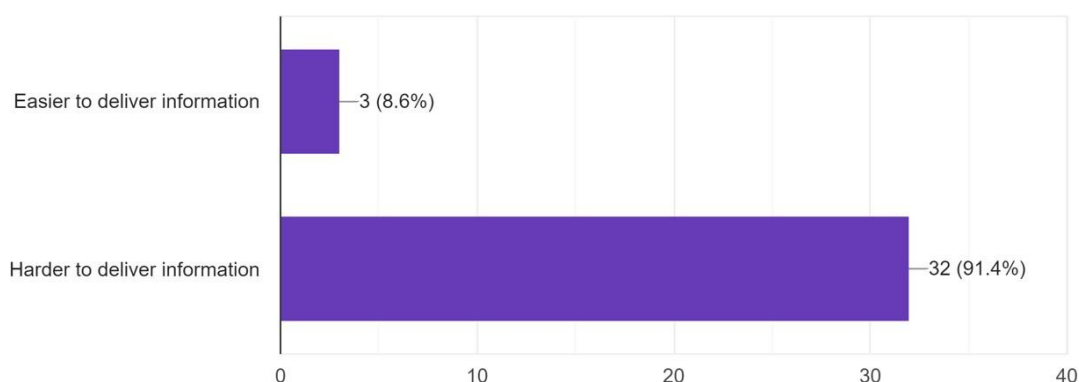


Figure 12: Distribution of respondents' perception on online learning compared to face-to-face sessions

Based on the chart above, it is shown that the majority of the respondents with the percentage of 91.4% (n=32) responded that it is harder to deliver information during online learning sessions, while only 8.6% (n=3) of them responded that it is easier to deliver information.

Discussion and Conclusion

The findings of this study show that the teachers were aware and have been using online platforms to teach hearing impaired students through online learning before and during Covid-19 pandemic. From the data obtained from the questionnaire, majority of the teachers have

been using Whatsapp Messenger as a medium to teach before Covid-19, as well as other platforms such as Google Meet, Microsoft Teams and Slideshare. During Covid-19, the teachers then opted for other options of online platforms, and they used videos and sign language as the methods to teach and enhance hearing impaired students' reading comprehension skill. Furthermore, the teachers resorted to the methods of giving out worksheets, pictures and texts as part of multisensory approach, in the name of using online platforms to help the students in hope of enhancing their comprehension skill during online learning. As stated by Coman et. al (2020), the adaptation of online educational process is always a choice to be considered, and eventually become one of the main bases in generating changes to the process itself. By all means, this is why the teachers always try to be open about taking approaches in cooperating online platforms into learning mediums for hearing impaired students.

Based on the data gained from the questionnaire, majority of the students do use their prior knowledge to help understanding the information delivered during online learning, however the percentage of them using their prior knowledge in virtual setting is decreasing between before and during online learning. Next, the reading tasks performance of hearing impaired students that can sign well during covid-19 also shows a decline compared to the period before Covid-19. This shows that online learning is not helping them in enhancing their comprehension skill. Their response to reading comprehension questions is also showing a significant drop, in comparison to the usual method of face-to-face learning sessions. In the final question, the teachers' response on the hearing impaired students' average achievement level before and during online learning was also showing a declining rate, proving that online learning cannot help in providing the suitable learning environment for the enhancement of hearing impaired students. According to Guardino & Cannon (2019), having consistent and balanced modes of learning between face-to-face and virtually is important to ensure comprehension skill development in the hearing impaired community. This is one way to see why online learning is affecting hearing impaired students negatively.

Conclusion

This study was conducted to investigate the effects of online learning during Covid-19 to hearing impaired students' comprehension skill. Special needs teachers were the focus of this study to oversee their evaluations of the hearing impaired students, and 35 special needs teachers have responded to the questionnaire. The overall findings showed that online learning during Covid-19 has been affecting hearing impaired students negatively, with the deterioration of their usage of prior knowledge, the lack of response towards comprehension skill questions and the decline in average achievement level in completing comprehension skill tasks given to them.

This study will contribute significantly as a reference to develop appropriate strategies to be implemented by hearing impaired students during online learning with teacher's guide. In terms of education contribution, the teachers can adopt any suitable teaching methods to enhance the students' reading comprehension. Moreover, this study can help other researchers to find extensive information about the hearing impairment issues in schools in Malaysia. It is hopeful that the insights gained from this study will contribute to more exposure in terms of the approaches taken by teachers and students to enhance students' comprehension skill.

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