

# Need Assessment for Adaptation of 5<sup>th</sup> Grade English Text Book in Sign-Based Videos

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## Abstract

*There are many challenges to studying with the traditional teaching method for students with hearing impairment who need video-based resources in sign language to support their studies at home. Because of this, they have to face many problems; we must add technological strategies to help the learning of students with hearing impairment (SWHI) because technological integration has become vital in every field of education. This study aims to establish the need assessment for the adaptation of 5th-grade English textbooks in sign-based videos for students with hearing impairment (SWHI). This research was quantitative by nature. The researcher has used a self-developed questionnaire to collect the data. First, the researcher selected 30 teachers of SWHI from public schools of Lahore to check the reliability of the instrument, which was found at 0.801 as sample 350 teachers were selected conveniently as a sample from public schools of Punjab. Descriptive and inferential statistics were used to analyze the data. Findings revealed that many teachers need help with their knowledge, correctness, fluency, resources, vocabulary, and training regarding Pakistan sign language. They reported that they have gadgets and were trained to use them but did not have videos. They do not have SBV for primary classes according to different subjects. Moreover, this study will provide a strong base for developing sign-based videos to facilitate learning of SWHI and inculcate self-paced learning habits. It has been recommended that preparing the SBV is mandatory to learn SWHI, their parents, and novice teachers effectively.*

**Keywords:** Videos in Sign Language, Traditional Teaching Method, Technological Integration, Deaf Students, English Content.

## Introduction

Learning through technology-enhanced instructions and material is highly required to keep pace with the latest trends in learning. If the researchers work to develop learning materials, the entire learning procedure can be very effective and beneficial for the students. To broaden this concept of learning, technology-integrated strategies will open new doors for deaf students and will affect them throughout their lives. This technique for learning has already been developed by foreign experts in American sign language, but they have yet to work for Pakistan sign language (Effendi, 2016).

The research described a learning management system (LMS) that offered Greek sign language videos for each text block in the learning environment. The system satisfied the deaf learners' needs by providing bilingual information (text and sign language), a high level of visualization, and learning with peers through video conferencing. The researcher describes that technological video-based integration can significantly enhance the knowledge and learning of students with hearing impairment (Ahmadi, 2018).

The problems faced by deaf students when reading text were reported in different research, and there were recommendations to adapt the text in an e-learning Computing course, which

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eventually showed a promising result on the level of understanding among those students (Olakanmi & Dada, 2020).

Learning through technology-enhanced instructions and material is highly required to keep pace with the latest trends in learning. If the researchers work to develop learning materials, the entire learning procedure can be very effective and beneficial for students with hearing impairment. To broaden this concept of learning, this kind of study will open new doors for deaf students, affect them throughout their lives, and enhance their knowledge (Kurnia, 2019). This study highlights the importance of technology-enhanced learning and gives directions to adapt 5th-grade English textbooks to sign-based videos. English textbook of class 5 will be adapted in Pakistan sign language to make it accessible for SWHI. The complete content will be represented in Pakistan sign language (PSL), and these signs will be provided in video format according to the requirements of each chapter. This study is a great initiative to integrate technology into the learning content of SWHI, and this process will eradicate the traditional teaching method.

The purpose of this study is to assess the need for adapting the English textbook of grade 5 to facilitate students with hearing impairment, and this system will help out-of-school kids as well. Moreover, this study will explore the latest domains of digital learning and will facilitate students' development of a self-paced learning habit. This system will provide written text and Pakistan Sign Language to make the text accessible for SWHI. It will greatly support novice teachers and parents of SWHI who have limited knowledge of PSL.

In Pakistan, students with hearing impairments face challenges in learning due to technology-enhanced teaching methods. This study aims to make learning more comfortable and motivating for these students. Video-based Pakistan Sign Language intervention can help them with independent reading and concept clarification, as parents lack knowledge about specific vocabulary.

### **Research Gap**

Less research is conducted in the country on the practice of rigid assessment methods by the teachers for deaf students that force them to leave schools as a result of repetitive failures in the examination. Due to short memory, SWHI has no study habits, which hinders them from revising the class work in the evening. They needed online resources to clarify their concepts, and parents were also helpless to explain them due to their lack of knowledge about sign language.

### **Literature Review**

Hearing loss or impairment can refer to a condition in which a person cannot, partially or entirely, hear sound in one or both ears. The severity of hearing loss can range from mild to profound. Hearing-impaired people cannot develop speech and language (Meadow, 2023). There are three types of hearing impairment. In conductive Hearing Loss, sound waves do not pass through the outer ear, tympanic membrane (eardrum), or middle ear (ossicles). In other words, dis-functioning of the outer or middle ear is called conductive hearing loss results (Hendriks, 2023). Sensorineural damage is any damage to the inner ear or Auditory nerve (Nightengale, 2017). Mixed (conductive and sensorineural) damage, an individual can have either or both conductive and sensorineural hearing loss, called mixed hearing loss (Elbeltagy, 2020). Central damage, which is damage to the brain's neural pathways and hearing centers resulting from malformations or infections, is the cause of central hearing loss (Marlin et al., 2022). Deafness is divided into categories: mild hearing loss (15–30 dB loss), moderate hearing loss, 31-60 loss, severe hearing loss/impairment, 61-90 dB loss, and profound hearing impairments, 91-120 dB loss (Mitchell & Sutherland, 2020).

Due to a dysfunctional or absent auditory response to sound, a student or kid with deafness or hard of hearing disorders suffers difficulties in language and speech development (Burkhart, Asogwa et al. 2020). Learning to read becomes extremely difficult for children who cannot hear or are hard of hearing. It increased the dropout rate of SWHI (Elbeltagy, 2020).

Technology is used in education to facilitate the learner in their learning. When the principles of technology and education are combined, the results are better and can improve their learning (Clark & Mayer, 2023). Multimedia technology can be used as much as possible in the educational process, especially in special schools, where more technology is needed to support the learning of kids with differentiated learning needs (Singh, 2021). This can help the teacher address SWHI's learning needs (Kirk, 2022).

Interactive learning materials must be designed according to learners' age and abilities and align with objectives and subject matters. Adaptation is a major element in making the content accessible to all types of learners. According to the law, no child is left behind (Ali et al., 2020). The inclusion of videos in the classroom can greatly aid students' learning. Because we frequently communicate with gestures, eye contact, and facial expressions to convey meaning (Kirk et al., 2022). video can be accessible without the need for language. The learning process for deaf pupils uses software and multimedia resources that can aid in understanding as much as feasible. Studies demonstrate that these materials have a significant positive influence on student learning (Cowan, 2019). Research indicates that lessons presented through videos, oral and written forms greatly impact the learning of students with hearing impairment (Kurnia, 2019).

Research on hearing impairment differs, complicating comparison and intervention planning. Emphasis should be placed on delivering interventions and measuring incidence in developing countries. These interventions may be intended to increase their school involvement, enhancing their academic performance and quality of life, which have been reported to be particularly low in this group (Khasawneh, 2023). A promising technique that could be used to help hearing-impaired participants increase their school participation is video-guided educational intervention. The video-guided educational intervention is a group-based innovative educational approach (Rajadell & Garriga, 2017).

After being guided through the video content, the intervention's participants are primarily guided to develop desired behaviors that support academic engagement. Previous research has demonstrated the usefulness of video-guided interventions for SWHI (Ratanjee, 2020). Another study found that students with hearing impairments performed significantly better on English Language tests after receiving captioned video training. A video-based intervention was also used. According to research, parent-based video home instruction for SWHI (Li, 2022).

Online videos offer accessibility, adaptability, and a wide range of information, aiding teachers and students in accessing course material and enhancing classroom engagement (Aljedaani, 2023). Children with hearing impairment in Pakistan can benefit from collaborative learning using Pakistan Sign Language, a sign language used by deaf people. However, a recognized sign language is needed to ensure effective instruction, and interactive online tools are ineffective (Rho, 2020). Due to this, students with hearing impairment cannot use online learning tools. One of the key fields of computer vision today is automated sign language recognition because of its applications in this field (Griffin, 2021).

The current education system in Pakistan and globally needs to be more expensive, ineffective, and outdated, failing to educate millions of illiterates and create critical thinkers and problem-solvers for today's global economy (Qazi & Iqbal, 2016). Online education can address Pakistani education challenges, such as quality and access issues, by promoting real-world challenges and transforming the educational landscape globally (Lynch et al., 2020).

Technology-based learning (TBL) has evolved from traditional methods like video tapes and satellite uploads to CD-ROMs and the Internet. This allows for multiple learning styles, improves student involvement, and enables interaction (Luangrungruang & Kokaew, 2022). Educational videos can motivate students, provide quick explanations, and enhance learning compared to verbal or written forms, potentially accelerating progress (Rahmiwati, 2022).

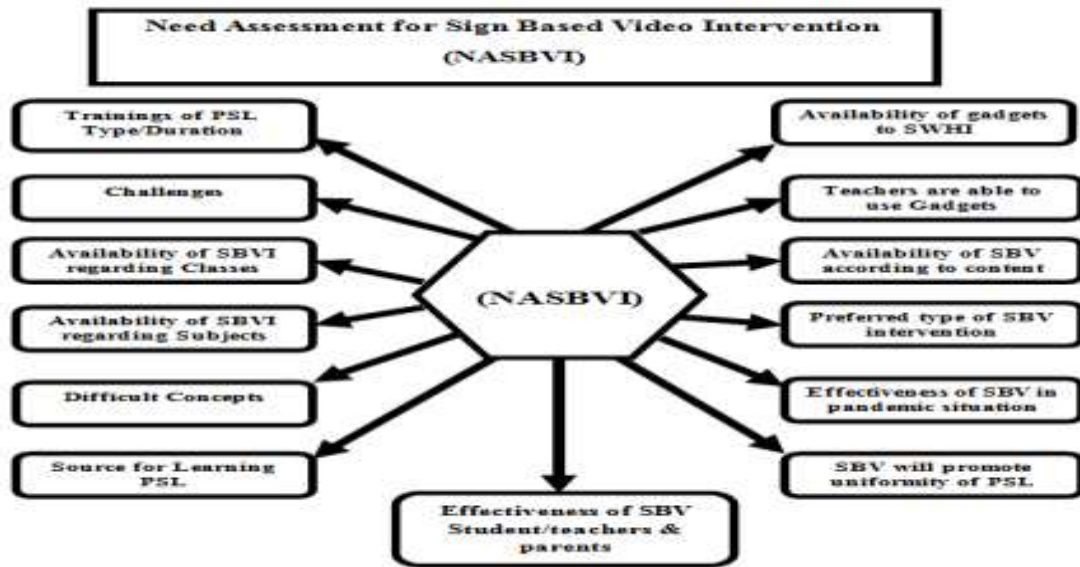
Conventional education methods must be updated to adapt to modern technologies. To improve learning pedagogies, it is crucial to adopt technology-based learning methods, such as constructive approaches and interactive learning, using digital game-based tools and established pedagogy and instructional design models (Azor, 2020).

Traditional education often leads to boredom, negative behaviors, disaffection, and misconceptions, whereas learning motivation and engagement improve academic performance and student retention (Fernández, 2021). Students who are deaf require sign interpreters' assistance to comprehend abstract ideas, highlighting the significant impact of technology-enhanced learning activities on their understanding and emotional engagement. Video-based learning enhances understanding for deaf students by providing visual materials, preventing communication breakdowns, and aligning with modern information and communication technologies (Pichora, 2016).

### **Research Methodology**

The research used social model theory for this study. This emphasizes that SWHI have the right to be a part of society, and they must have all the opportunities as children without disabilities. In the current study, the researcher had chosen "positivism" to address the research questions under quantitative research design. Positivism emphasizes using empirical evidence and objective observations to establish knowledge (Park, 2020). The current study is quantitative. A descriptive research design was employed to collect quantitative data through a close-ended survey questionnaire. A literature review guided the researcher to choose the survey method for establishing the research base. For this purpose, the researcher has used the self-developed questionnaire to establish a baseline for the intervention planned for the study's second phase (i.e., to adapt the English textbook in sign-based videos). A hypothetical framework was developed to design the questionnaire. The need assessment survey questionnaire was employed for data collection from the selected sample of hearing-impaired teachers. The questionnaire covered the key variables of need assessment. The needs assessment was done using a quantitative approach using a survey method in the form of a close-ended questionnaire on a 3-point Likert-type scale. The researcher named the questionnaire "Need Assessment for Sign-Based Video Intervention (NASBVI). The following figure illustrates the constructs of the instrument (NASBVI):

**Figure 1 Need Assessment for Sign Based Video Intervention**



After completing the validation process of the instrument, the researcher selected 150 teachers from the different institutes of SWHI for pilot testing of the instrument after collecting the data from 150 teachers of SWHI. After collecting data, the researcher entered SPSS to check the instrument's reliability and found it to have a 0.801 Cronbach's Alpha value, considered good instrument reliability.

**Table 1 Reliability of NASBVI**

Reliability Statistics	
Cronbach's Alpha	No. of Items
.801	68

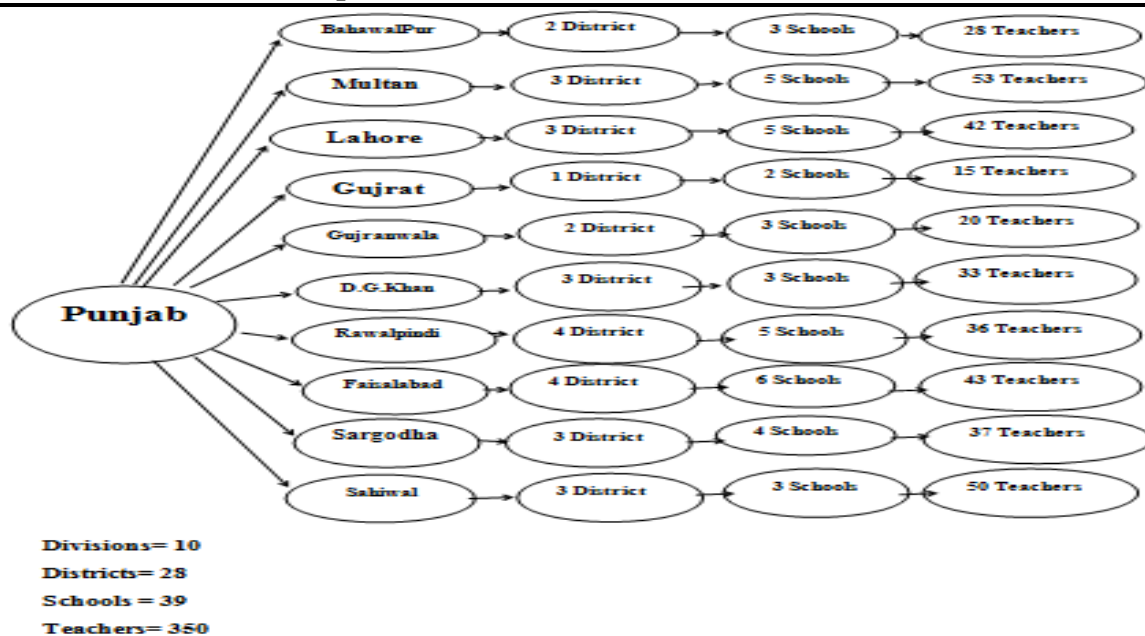
In the first stage, 28 districts were selected from all 10 divisions using a convenient sampling technique. Moving to the second stage, 39 schools were conveniently chosen from 43 schools affiliated with SWHI under the Directorate General of Special Education, Punjab.

Four hundred fifty-three questionnaires were dispatched to all selected schools based on the number of appointed teachers. Out of these, 350 questionnaires were returned, resulting in a response rate of 77%, as per the received data. The distribution of the sample is outlined below:

**Table 2 Distribution of sample**

Sr. no		Total	Selected
1	Total number of Divisions	10	10
2	Total number of Districts	42	28
3	Total number of Schools	43	39
4	Total number of teachers	453	350

Figure 2 Distribution of sample



### Data Analysis

This study used descriptive and inferential statistics to analyze the data. Data will be collected numerically by conducting a quantitative survey of 350 public school teachers in the Punjab.

Table 3 Frequency distribution of Divisions

Sr.no	Division	f	%
1	Bahawalpur	22	6.3
2	D.G.Khan	33	9.4
3	Faisalabad	52	14.9
4	Gujranwala	35	10.0
5	Lahore	41	11.7
6	Multan	53	15.1
7	Rawalpindi	36	10.3
8	Sahiwal	50	14.3
9	Sargodha	28	8.0

Table 3 indicates that District wise distribution shows, 22 (6.30%) teachers were from Bahawalpur division, 33 (9.40%) from D.G Khan Division, 52 (14.9%) from Faisalabad division, 35(10.0%) from Gujranwala Division, 41 (11.7%) from Lahore Division, 53 (15.1%) from Multan division, 36 (10.3%) from Rawalpindi Division, 50 (14.3%) from Sahiwal division, 28 (8.0%) from Sargodha Division.

Table 4 Frequency distribution of Age

Sr. no	Age	f	%
1	24 to 30 years	59	16.9
2	31 to 37 years	125	35.7
3	38 to 44 years	114	32.6
4	45 to 51 years	42	12.0
5	52 to 59 years	10	2.9

Table 4 indicates that among these, 59 (16.9 %) teachers were of age 24 to 30 years, 125 (35.7%) teachers were of the age group 31 to 37 years, 114 (32.6%) teachers were of the age group 38 to 44 years, 42 (12.0%) teachers were of the age group 44 to 51 years, while 10 (2.90%) teachers were 52 to 59 years old.

**Table 5 Frequency Distribution of Qualification**

Sr#	Qualification	F	%
1	B.A., B.Ed./M.A. T. D	32	9.1
2	M.A. & SLP	9	2.6
3	M.A, M.Ed./ M.A. Sp. Edu	220	62.9
4	M.Phil.	77	22.0
5	M.S. in SLP	7	2.0
6	Other Discipline	5	1.4

Table 5 indicates that 32 (9.1%) teachers are B.A., B.Ed./M.A. T. D, and 9 (2.6%) teachers are M. A & SLP, 220 (62.9%) teachers are M.A, M.Ed./ M.A. Sp. Edu, 77 (22.0%) teachers are M.Phil., 7 (2.0%) teachers are M.S. in SLP, 5 (1.4%) teachers are other discipline.

**Table 6 Frequency Distribution of Gender**

Sr.no	Gender	f	%
1	Female	282	80.6
2	Male	68	19.4

Table 6 indicates that out of 350 teachers, 282 (80.6%) were females, while 68 (19.4 %) were males.

**Table 7 Frequency Distribution of Teaching Experience**

Sr.no	Teaching Experience	f	%
1	1 to 7 years	170	48.6
2	8 to 14 years	108	30.9
3	15 to 21 years	56	16.0
4	22 to 28 years	9	2.6
5	29 to 34 years	7	2.0
6	1 to 7 years	170	48.6

Table 7 indicates that among these teachers, the teaching experience of 170 (48.6%) teachers is 1 to 7 years, 108 (30.9%) teachers are 8 to 14 years, 56 (16.0%) teachers are 15 to 21 years, 9 (2.6%) teachers are 22 to 28 years, 7 (2.0%) teachers are 29 to 34 years.

**Table 8 Frequency distribution of Training of PSL**

Sr.no	Training of PSL	f	%
1	No	328	93.7
2	Yes	22	6.3

Table 8 indicates that Out of these 350 teachers, 328 (93.7%) teachers do not have a certificate of SL, and 22 (6.3%) teachers have a certificate of SL.

**Table 9 Frequency Distribution of Types of SL Training**

Sr.no	Type of SL training	F	%
1	No	8	2.3
2	Pre service Training	32	9.1
3	In service training	276	78.9
4	Both training	34	9.7

Table 9 indicates that Out of all these 350 teachers, 32 (9.1%) teachers have pre-service training, 276 (78.9%) teachers have in-service training, 34 (9.7%) teachers have Both training and 8 (2.3%) teachers have No training at all.

**Table 10 Frequency Distribution of Duration of SL Training**

Sr.no	Duration of SL Training	f	%
1	No	8	2.3
2	1 to 4 weeks	297	84.9
3	5 to 8 weeks	21	6.0
4	9 to 12 weeks and above	24	6.9

Table 10 indicates that out of all these teachers 297 (84.9%) have 1 to 4 weeks of training, 21 (6.0%) teachers have 5 to 8 weeks of training, 24 (6.9%) teachers have 9 to 12 or above training and 8 (2.3%) teachers don't have any training duration at all.

**Table 11 Frequency distribution of Challenges**

Sr.no	Statements	No		To some extent		Yes	
		F	%	f	%	f	%
1	Lack of knowledge about sign language	96	27.4	106	30.3	148	42.3
2	Lack of correctness in using PSL	85	24.3	88	25.1	177	50.6
3	Lack of fluency in PSL	88	25.1	72	20.6	190	54.3
4	Lack of resources regarding PSL	74	21.1	60	17.1	216	61.7
5	Lack of available vocabulary of PSL	66	18.9	63	18.0	221	63.1
6	Lack of refreshing/updated training according to changes in content	55	15.7	64	18.3	231	66.0
7	Regional variations in PSL	67	19.1	59	16.9	224	64.0

Table 11 indicates that 96(27.4%) reported No, 106(30.3%) reported to some extent and 148(42.3%) respondents reported Yes in response of “ Lack of knowledge about sign language” , 85(24.3%) reported No, 88(25.1%) reported to some extent and 177(50.6%) respondents reported in response of “ Lack of correctness in using PSL” , 88(25.1%) reported No, 72(20.6%) reported to some extent and 190(54.3%) respondents reported in response of “ Lack of fluency in PSL” , 74(21.1%) reported No, 60(17.1%) reported to some extent and 216(61.7%) respondents reported in response of “ Lack of resources regarding PSL” , 66(18.9%) reported No, 63(18%) reported to some extent and 221(63.1%) respondents reported in response of “ Lack of available vocabulary of PSL” , 55(15.7%) reported No, 64(18.3%) reported to some extent and 231(66%) respondents reported in response of “Lack of refreshing/updated training according to changes in content ” , 67(19.1%) reported No,



59(16.9%) reported to some extent and 224(64%) respondents reported in response of “Regional variations in PSL ” .

**Table 12 Frequency distribution of availability of SBV**

Sr.no	Statements	No		To some extent		Yes	
		f	%	f	%	f	%
1	Video Based Intervention availability of Class 1	177	50.6	34	9.7	139	39.7
2	Video Based Intervention availability for Class 2	201	57.4	33	9.4	116	33.1
3	Video Based Intervention availability for Class 3	205	58.6	36	10.3	109	31.1
4	Video Based Intervention availability for Class 4	214	61.1	38	10.9	98	28.0
5	Video Based Intervention availability for Class 5	208	59.4	42	12.0	100	28.6

Table 12 indicates that 177(50.6%) reported No, 34(9.7%) reported to some extent, and 139(39.7%) respondents reported Yes in response to “Video Based Intervention availability of Class 1”, 201(57.4%) reported No, 33(9.4%) reported to some extent and 116(33.1%) respondents reported Yes in response of “Video Based Intervention availability of Class 2”, 205(58.6%) reported No, 36(10.3%) reported to some extent and 109(31.1%) respondents reported Yes in response of “Video Based Intervention availability of Class 3”, 214(61.1%) reported No, 38(10.9%) reported to some extent and 98(28.0%) respondents reported Yes in response of “Video Based Intervention availability of Class 4”, 208(59.4%) reported No, 42(12.0%) reported to some extent and 100(28.6%) respondents reported Yes in response of “Video Based Intervention availability of Class 5”.

**Table 13 Frequency distribution of Availability of Intervention for subjects**

Sr.no	Statement	No		To Some extent		Yes	
		f	%	f	%	f	%
1	Video Based Intervention availability for English	160	45.7	63	18.0	127	36.3
2	Video Based Intervention availability for Urdu 2	164	46.9	63	18.0	123	35.1
3	Video Based Intervention availability for Mathematics	180	51.4	63	18.0	107	30.6
4	Video Based Intervention availability for Islamiyat	187	53.4	67	19.1	96	27.4
5	Video Based Intervention availability for social studies	200	57.1	68	19.4	82	23.4
6	Video Based Intervention availability for General Science	199	56.9	68	19.4	83	23.7

Table 13 indicates that 160(45.7%) reported No, 63(18.0%) reported to some extent and 127(36.3%) respondents reported Yes in response of “Video Based Intervention availability

for English”, 164(46.9%) reported No, 63(18.0%) reported to some extent and 123(35.1%) respondents reported Yes in response of “Video Based Intervention availability for Urdu 2”, 180(51.4%) reported No, 63(18.0%) reported to some extent and 107(30.6%) respondents reported Yes in response of “Video Based Intervention availability for Mathematics”, 187(53.4%) reported No, 67(19.1%) reported to some extent and 96(27.4%) respondents reported Yes in response of “Video Based Intervention availability for Islamiyat”, 200(57.1%) reported No, 68(19.4%) reported to some extent and 82(23.4%) respondents reported Yes in response of “Video Based Intervention availability for Social studies”, 199(56.9%) reported No, 68(19.4%) reported to some extent and 83(23.7%) respondents reported Yes in response of “Video Based Intervention availability for General Science”.

**Table 14 Frequency distribution of Conveying concept difficulty level**

Sr.no	Statements	No		To some Extent		Yes	
		f	%	f	%	f	%
1	Noun is a difficult concept to communicate in sign language	229	65.4	54	15.4	67	19.1
2	Pro Noun is a difficult concept to communicate in sign language	202	57.7	52	14.9	96	27.4
3	Verb is a difficult concept to communicate in sign language	210	60.0	49	14.0	91	26.0
4	Adverb is a difficult concept to communicate in sign language	168	48.0	68	19.4	114	32.6
5	Adjectives is a difficult concept to communicate in sign language	171	48.9	58	16.6	121	34.6
6	Concrete Concepts is a difficult concept to communicate in sign language	184	52.6	60	17.1	106	30.3
7	Abstract Concepts is a difficult concept to communicate in sign language	116	33.1	60	17.1	174	49.7
8	Grammar is a difficult concept to communicate in sign language	108	30.9	69	19.7	173	49.4
9	Prepositions is a difficult concept to communicate in sign language	141	40.3	66	18.9	143	40.9
10	Whole Sentence is a difficult concept to communicate in sign language	139	39.7	82	23.4	129	36.9
11	Whole paragraph is a difficult concept to communicate in sign language	111	31.7	79	22.6	160	45.7

Table 14 indicates that 229(65.4%) reported No, 54(15.4%) reported to some extent, and 67(19.1%) respondents reported Yes in response to “Noun is a difficult concept to communicate in sign language,” 202(57.7%) reported No, 52(14.9%) reported to some extent and 96(27.4%) respondents reported Yes in response of “Pro Noun is a difficult concept to communicate in sign language,” 210(60.0%) reported No, 49(14.0%) reported to some extent and 91(26.0%) respondents reported Yes in response of “Verb is a difficult concept to communicate in sign language,” 168(48.0%) reported No, 68(19.4%) reported to some extent and 114(32.6%) respondents reported Yes in response of “Adverb is a difficult concept to communicate in sign language”, 171(48.9%) reported No, 58(16.6%) reported to some extent and 121(34.6%) respondents reported Yes in response of “Adjectives is a difficult concept to communicate in sign language”. 184(52.6%) reported No, 60(17.1%) reported to some extent

and 106(30.3%) respondents reported Yes in response of “Concrete Concepts is a difficult concept to communicate in sign language”, 116(33.1%) reported No, 60(17.1%) reported to some extent and 174(49.7%) respondents reported Yes in response of “Abstract Concepts is a difficult concept to communicate in sign language”, 108(30.9%) reported No, 69(19.7%) reported to some extent and 173(49.4%) respondents reported Yes in response of “Grammar is a difficult concept to communicate in sign language”, 141(40.3%) reported No, 66(18.9%) reported to some extent and 143(40.9%) respondents reported Yes in response of “Prepositions is a difficult concept to communicate in sign language”, 139(39.7%) reported No, 82(23.4%) reported to some extent and 129(36.9%) respondents reported Yes in response of “Whole Sentence is a difficult concept to communicate in sign language”, 111(31.7%) reported No, 79(22.6%) reported to some extent and 160(45.7%) respondents reported Yes in response of “Whole paragraph is a difficult concept to communicate in sign language”.

**Table 15 Frequency distribution of Seeking help for learning PSL**

Sr. no	Statements	No		To some extent		Yes	
		f	%	F	%	f	%
1	Take help from sign language books	48	13.7	28	8.0	274	78.3
2	Take help from any student in class	84	24.0	67	19.1	199	56.9
3	Take help from Senior/experienced Colleagues	48	13.7	47	13.4	255	72.9
4	Take help from sign-based videos as per curriculum	66	18.9	42	12.0	242	69.1
5	Take help from sign based Mobile Applications	74	21.1	37	10.6	239	68.3

Table 15 indicates that 48(13.7%) reported No, 28(8.0%) reported to some extent, and 274(78.3%) respondents reported Yes in response to “Take help from sign language books,” 84(24.0%) reported No, 67(19.1%) reported to some extent and 199(56.9%) respondents reported Yes in response of “Take help from any student in class,” 48(13.7%) reported No, 47(13.4%) reported to some extent and 255(72.9%) respondents reported Yes in response of “Take help from Senior/experienced Colleagues,” 66(18.9%) reported No, 42(12.0%) reported to some extent and 242(69.1%) respondents reported Yes in response of “Take help from sign-based videos as per curriculum”, 74(21.1%) reported No, 37(10.6%) reported to some extent and 239(68.3%) respondents reported Yes in response of “Take help from sign based Mobile Applications”.

Table 16 below indicates that 118(33.7%) reported No, 36(10.3%) reported to some extent, and 196(56.0%) respondents reported Yes in response to “availability of android mobile phone for” 192(54.9%) reported No, 31(8.9%) reported to some extent and 127(36.3%) respondents reported Yes in response of “availability of personal computers for teaching,” 199(56.9%) reported No, 40(11.4%) reported to some extent, and 111(31.7%) respondents reported Yes in response of “availability of laptops for teaching”, 201(57.4%) reported No, 34(9.7%) reported to some extent and 115(32.9%) respondents reported Yes in response of “Availability of Tablets for teaching.”

**Table 16 Frequency distribution of Availability of Gadgets**

Sr.no	Statements	No		To some extent		Yes	
		f	%	f	%	f	%
1	Availability of Android Mobile Phone for teaching	118	33.7	36	10.3	196	56.0
2	Availability of Personal Computers for teaching	192	54.9	31	8.9	127	36.3
3	Availability of Laptops for teaching	199	56.9	40	11.4	111	31.7
4	Availability of Tablets for teaching	201	57.4	34	9.7	115	32.9

Sr.no	Statements	No		To some extent		Yes	
		f	%	f	%	f	%
1	Teachers are trained for using Android Mobile Phones	75	21.4	44	12.6	231	66.0
2	Teachers are trained for using Personal Computers	113	32.3	70	20.0	167	47.7
3	Teachers are trained for using Laptops	118	33.7	63	18.0	169	48.3
4	Teachers are trained for using Tablets	135	38.6	57	16.3	158	45.1
5	Teachers are trained for using Multimedia Projectors	147	42.0	53	15.1	150	42.9

**Table 17 Frequency distribution of are teachers trained for using gadgets?**

Table 17 above projects that Teachers were trained to use Android Mobile Phones, and 75 individuals (21.4%) reported "No," 44 (12.6%) reported "To some extent," and 231 (66.0%) reported "Yes." Similarly, for the question "Teachers were trained for using personal computers," 113 respondents (32.3%) reported "No," 70 (20.0%) reported "to some extent," and 167 (47.7%) reported "Yes." In the case of "teachers are trained for using laptops," 118 participants (33.7%) reported "No," 63 (18.0%) reported "To some extent," and 169 (48.3%) reported "Yes." For the question related to training in the use of Tablets, 135 respondents (38.6%) reported "No," 57 (16.3%) reported "to some extent," and 158 (45.1%) reported "Yes." lastly, concerning training for the use of multimedia projectors, 147 individuals (42.0%) reported "No," 53 (15.1%) reported "to some extent," and 150 (42.9%) reported "Yes."

Table 18 below indicates that 79(22.6%) reported No, 77(22.0%) reported to some extent, and 194(55.4%) respondents reported Yes in response to "Have you ever used sign-based videos according to content for teaching English to students with hearing impairment?", 129(36.9%) reported No, 45(12.9%) reported to some extent, and 176(50.3%) respondents reported Yes in response to "Do you think parents can use video-based sign language approaches to teach the children with hearing impairment at home?", 55(15.7%) reported No, 37(10.6%) reported to some extent, and 258(73.7%) respondents reported Yes in response to "Do you think that teachers can use the sign-based videos for making the teaching of English interesting and joyful for students with hearing impairment?", 206(58.9%) reported No, 39(11.1%) reported to some extent, and 105(30.0%) respondents reported Yes in response to "Do you think that institutes for children with hearing impairment are well equipped for using sign-based videos in the classroom?", 88(25.1%) reported No, 25(7.10%) reported to some extent, and 237(67.7%)

respondents reported Yes in response to “Do you want to have a Uniformed Pakistan Sign Language in all over Pakistan?” 40(11.4%) reported No, 52(14.9%) reported to some extent, and 258(73.7%) respondents reported Yes in response to “Do you think that in any pandemic situation, video-based instruction can help teach children with hearing impairment?”, 40(11.4%) reported No, 45(12.9%) reported to some extent, and 265(75.7%) respondents reported Yes in response to “Do you think that in COVID-19 or any other pandemic situation,

**Table 18 Frequency distribution of Experience about using SBV according to content**

Sr.no	Statements	20%		40%		60%		80%		100%	
		f	%	f	%	f	%	f	%	f	%
1	Which type of intervention will you prefer on priority basis while teaching English Video in Sign Language	35	10.0	55	15.7	77	22.0	69	19.7	114	32.6
2	Which type of intervention will you prefer on priority basis while teaching English Video in sign language with text captions/subtitles	23	6.6	21	6.0	86	24.6	103	29.4	117	33.4
3	Which type of intervention will you prefer on priority basis while teaching English Video in sign language with text captions/subtitles and Pictures	16	4.6	18	5.1	41	11.7	57	16.3	218	62.3

video-based instructions should be mandatory for students with hearing impairment?”

**Table 19 Frequency distribution of which type of SBV preferable among teachers**

Table 19 indicates that 35(10.0%) reported 20%, 55(15.7%) reported 40%, 77(22.0%) reported 60%, 69(19.7%) reported 80%, and 114(32.6%) respondents reported 100% in response of “Which type of intervention will you prefer on priority basis while teaching English Video in Sign Language,” 23(6.6%) reported 20%, 21(6.0%) reported 40%, 86(24.6%) reported 60%, 103(29.4%) reported 80% and 117(33.4%) respondents reported 100% in response of “Which type of intervention will you prefer on priority basis while teaching English Video in sign language with text captions/subtitles”, 16(4.6%) reported 20%, 18(5.1%) reported 40%, 41(11.7%) reported 60%, 57(16.3%) reported 80% and 218(62.3%) respondents reported 100% in response of “Which type of intervention will you prefer on priority basis while teaching English Video in sign language with text captions/subtitles and Pictures”.

**Table 19 Frequency distribution of for whom SBV will helpful**

Sr.no	Statements	20%		40%		60%		80%		100%	
		f	%	f	%	f	%	f	%	f	%
1	Do you think that use of sign-based videos can be helpful for novice teachers	33	9.4	41	11.7	60	17.1	86	24.6	130	37.1
2	Do you think that use of sign-based videos can be helpful for experienced teachers	28	8.0	30	8.6	80	22.9	95	27.1	117	33.4
3	Do you think that use of sign-based videos can be helpful for students to understand sign with text?	19	5.4	21	6.0	63	18.0	108	30.9	139	39.7
4	Do you think that use of sign-based videos can be helpful for teachers to find out the signs of new words in text?	20	5.7	16	4.6	56	16.0	112	32.0	146	41.7
5	Do you think that use of sign-based videos can be helpful for teachers to be fluent in Sign Language?	23	6.6	20	5.7	52	14.9	106	30.3	149	42.6
6	Do you think that use of sign-based videos can be helpful to promote the uniformity of Sign Language?	18	5.1	10	2.9	57	16.3	87	24.9	178	50.9
7	Do you think that use of sign-based videos can be helpful to improve the academic performance of students with hearing impairment?	24	6.9	12	3.4	47	13.4	88	25.1	179	51.1
8	Do you think that use of sign-based videos can be helpful to facilitate the parents to support their children at home in sign language?	25	7.1	20	5.7	50	14.3	70	20.0	185	52.9

Table 19 indicates that 33(9.4%) reported 20%, 41(11.7%) reported 40%, 60(17.1%) reported 60%, 86(24.6%) reported 80%, and 130(37.1%) respondents reported 100% in response of “Do you think that use of sign-based videos can be helpful for novice teachers,” 28(8.0%) reported 20%, 30(8.6%) reported 40%, 80(22.9%) reported 60%, 95(27.1%) reported 80% and 117(33.4%) respondents reported 100% in response of “Do you think that use of sign-based videos can be helpful for experienced teachers”, 19(5.4%) reported 20%, 21(6.0%) reported

40%, 63(18.0%) reported 60%, 108(30.9%) reported 80% and 139(39.7%) respondents reported 100% in response of “Do you think that use of sign-based videos can be helpful for students to associate sign with text?”. 20(5.7%) reported 20%, 16(4.6%) reported 40%, 56(16.0%) reported 60%, 112(32.0%) reported 80% and 146(41.7%) respondents reported 100% in response of “Do you think that use of sign-based videos can be helpful for teachers to find out the signs of new words in text?” 23(6.6%) reported 20%, 20(5.7%) reported 40%, 52(14.9%) reported 60%, 106(30.3%) reported 80% and 149(42.6%) respondents reported 100% in response of “Do you think that use of sign-based videos can be helpful for teachers to be fluent in Sign Language?”, 18(5.1%) reported 20%, 10(2.9%) reported 40%, 57(16.3%) reported 60%, 87(24.9%) reported 80% and 178(50.9%) respondents reported 100% in response of “Do you think that use of sign-based videos can be helpful to promote the uniformity of Sign Language?”. 24(6.9%) reported 20%, 12(3.4%) reported 40%, 47(13.4%) reported 60%, 88(25.1%) reported 80% and 179(51.1%) respondents reported 100% in response of “Do you think that use of sign-based videos can be helpful to improve the academic performance of students with hearing impairment?”. 25(7.1%) reported 20%, 20(5.7%) reported 40%, 50(14.3%) reported 60%, 70(20.0%) reported 80% and 185(52.9%) respondents reported 100% in response of “Do you think that use of sign-based videos can be helpful to facilitate the parents to support their children at home in sign language?”

### **Finding**

Most teachers need more knowledge, correctness, fluency, resources, vocabulary, and training regarding Pakistan Sign Language. Most of the respondents, out of 350 participants, reported having no SBV for primary classes. Most of the respondents, from a total of 350 participants, reported that they have no SBV for various subjects of primary level. Most of the respondents, 350 participants, reported having difficulty communicating concrete concepts, Grammar, prepositions, whole sentences, and whole paragraphs. Most respondents, from a total of 350 participants, reported that they take help from SL books, Students in class, and senior colleagues rather than mobile apps and videos. Most of the respondents from 350 participants reported that teachers are well-trained to use gadgets such as mobile phones, PCs, and laptops, but institutes need to be better equipped to use these gadgets. Most of the respondents, from a total of 350 participants, reported that SBV would be helpful for teachers and parents, improving the academic performance of students and novice teachers, as well as the fluency and uniformity of PSL.

### **Conclusion**

The study concludes that most teachers need help with their knowledge, correctness, fluency, resources, vocabulary, and training regarding Pakistan sign language. Many respondents reported that they need sign-based video intervention for primary classes and subject-wise intervention they have. Most respondents reported that sometimes they need help communicating concrete concepts, grammar, prepositions, whole sentences, and whole paragraphs. Most respondents reported that they get help from SL books, students in class, and senior colleagues rather than mobile apps and videos. They reported that teachers are well trained to use mobile, PCs, and laptops, but institutes must be better equipped for these gadgets. They reported that SBV would be helpful for teachers and parents, improving students' academic performance and novice teachers' fluency and uniformity of PSL.

### **Recommendations**

Pakistan Sign Language (PSL) teachers should undergo comprehensive training programs to improve their knowledge, fluency, vocabulary, and proficiency. They should develop sign-based video interventions for primary classes, implement subject-wise interventions, and use

traditional methods like sign language books and student collaboration. Teachers should also integrate technology into teaching practices and introduce Sign-Based Videos (SBV) for improved fluency and consistency. Emphasizing the connection between proficiency and academic success, establishing continuous professional development mechanisms, and fostering collaboration between teachers and parents can strengthen the educational support system.

## References

- Ahmadi, D. M. R. (2018). The use of technology in English language learning: A literature review. *International journal of research in English education*, 3(2), 115-125.
- Ali, S. A., et al. (2020). The outbreak of Coronavirus Disease 2019 (COVID-19)—An emerging global health threat. *Journal of infection and public health*, 13(4), 644-646.
- Aljedaani, W. (2023). If online learning works for you, what about deaf students? Emerging challenges of online learning for deaf and hearing-impaired students during COVID-19: a literature review. *Universal access in the information society*, 22(3), 1027-1046.
- Azor, R. O. (2020). YouTube audio-visual documentaries: Effect on Nigeria students' achievement and interest in history curriculum. *The Journal of Educational Research*, 113(5), 317-326.
- Burkhart, K. (2020). Pediatric integrated care models: a systematic review. *Clinical pediatrics*, 59(2), 148-153.
- Clark, R. C., & Mayer, R. E. (2023). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. John Wiley & sons.
- Cowan, N. (2019). *Short-term memory based on activated long-term memory: A review in response to Norris (2017)*.
- Effendi, D. (2016). Smart city Nusantara development through the application of Penta Helix model (A practical study to develop smart city based on local wisdom). 2016 international conference on ICT for Smart Society (ICISS), IEEE.
- Elbeltagy, R. (2020). Prevalence of mild hearing loss in schoolchildren and its association with their school performance. *International Archives of Otorhinolaryngology*, 24, e93-e98.
- Fernández-Gavira, J. (2021). Design of educational tools based on traditional games for the improvement of social and personal skills of primary school students with hearing impairment. *Sustainability*, 13(22), 12644.
- Griffin, D. J. (2021). American Sign Language and English bilingualism: Educators' perspectives on a bicultural education. *International Journal of Bilingual Education and Bilingualism*, 24(6), 757-770.
- Hendriks, D. (2023). Engineered human hepatocyte organoids enable CRISPR-based target discovery and drug screening for steatosis. *Nature Biotechnology*, 1-15.
- Khasawneh, M. (2023). *The Mediating Role of Information Security Awareness and Technology Self Efficacy in the Relationship between E-Learning Readiness and Academic Performance*. Available at SSRN 4417815.
- Kirk, J. (2022). Keck/NIRSPEC studies of He I in the atmospheres of two inflated hot gas giants orbiting K dwarfs: WASP-52b and WASP-177b. *The Astronomical Journal*, 164(1), 24.
- Kirk, S. (2022). *Educating exceptional children*, Cengage Learning.
- Kurnia, Y. (2019). *Study of application of data mining market basket analysis for knowing sales pattern (association of items) at the O! Fish restaurant using apriori algorithm*. Journal of Physics: Conference Series, IOP Publishing.



- Li, X. (2022). Applying blended synchronous teaching and learning for flexible learning in higher education: an action research study at a university in Hong Kong. *Asia Pacific Journal of Education*, 42(2), 211-227.
- Luangrungruang, T., & Kokaew, U. (2022). E-Learning Model to Identify the Learning Styles of Hearing-Impaired Students. *Sustainability*, 14(20), 13280.
- Lynch, P. (2020). *Pakistan distance-learning topic brief: Primary-level deaf children*, EdTech Hub.
- Meadow, K. P. (2023). *Deafness and child development*. Univ of California Press.
- Mitchell, D. and D. Sutherland (2020). *What really works in special and inclusive education: Using evidence-based teaching strategies*, Routledge.
- Nightengale, E., et al. (2017). Understanding hearing and hearing loss in children with Down syndrome. *American Journal of Audiology*, 26(3), 301-308.
- Olakanmi, O. O. and A. Dada (2020). Wireless sensor networks (WSNs): Security and privacy issues and solutions. *Wireless mesh networks-security, architectures and protocols*, 13, 1-16.
- Park, Y. J. (2020). Contact tracing during coronavirus disease outbreak, South Korea, 2020. *Emerging infectious diseases*, 26(10), 2465.
- Pichora-Fuller, M. K. (2016). Hearing impairment and cognitive energy: The framework for understanding effortful listening (FUEL). *Ear and hearing*, 37, 5S-27S.
- Qazi, A. G., & Iqbal, S. (2016). *Online education taxonomy and analysis to promote Pakistani education*. INTED2016 Proceedings, IATED.
- Rahmiwati, S. (2022). Development of student competencies in integrated science subjects class VIII based on cognitive technology in the era of society 5.0. *Linguistics and Culture Review*, 6(S3), 237-247.
- Rajadell, M. and F. Garriga-Garzón (2017). "Educational videos: After the why, the how." *Intangible Capital*, 13(5), 902-922.
- Ratanjee-Vanmali, H. (2020). Patient uptake, experience, and satisfaction using web-based and face-to-face hearing health services: process evaluation study. *Journal of medical Internet research*, 22(3), e15875.
- Rho, E.(2020). An experiential learning approach to learning manual communication through a virtual reality environment. *IEEE Transactions on Learning Technologies*, 13(3), 477-490.
- Singh, H. (2021). *Building effective blended learning programs. Challenges and opportunities for the global implementation of e-learning frameworks*, IGI Global, 15-23.