



The Impact of Artificial Intelligence on LSRW Skill Development among Visually Impaired Learners

S. Maheshraja, Research Scholar, Kalasalingam Academy of Research and Education,
Anand Nagar, Krishnankovil-626126, Tamil Nadu, India.

ORCID: <https://orcid.org/0009-0007-1222-6030>

Dr. K.Gurusamy, Associate Professor, Department of English, School of Arts and Special Education,
Kalasalingam Academy of Research and Education, Krishnankoil, 626126, Tamil Nadu, India.

DOI: 10.5281/zenodo.21439189

Abstract

Around the world all students who learn their mother tongue, second and third languages through a step by step method that is called LSRW. This is nothing but Listening, Speaking, Reading and Writing of any language to make the students understand a language properly. In ELT (English Language Teaching) also this method is considered as the fundamental level. Teaching these levels to the visually impaired students is a kind of challenge, because such students are not able to learn English like the normal students. But the technology offer a helping hand to the teachers and visually impaired learners with assistive tools along with AI to maintain their way of learning as equal as normal learners. The growth of AI has turned the life of visually challenged people unlike anything. Even their canes and glasses have voice guidance support that removes the dependency of a person or a dog. This paper is about to perform qualitative researches to explore the role of AI assistive tools such as screen readers, TTS systems, speech recognition software, and large language models in enhancing the LSRW competencies of visually impaired students. This paper also explore about the freedom and improvement of visually challenged students in continuing language learning process without the support of anyone but technology. This kind of teaching process is recently growing in ELT pedagogy. However, this paper is about to identify the challenges like accessing technology with affordable condition, awareness on pedagogy, implementing them in institutions to enhance the experience in ELT.

Keywords: LSRW, visually impaired, artificial intelligence, ELT

1. Introduction

Students around the world are introduced at first with language papers along with major subjects. In India, New Educational Policy insists three language policy in schools. Around all the states of India, English Language Teaching comes under second language teaching in schools and colleges. Like other major subjects, ELT also uses textbooks, exercise sheets, visual presentations, and videos in ICT enabled classrooms. These are interactive methods for normal students where as visually impaired students have to be taken additional care in the process of language learning. In *The Practice of English Language Teaching* (2007), Harmer says, “In writing, we represent words and grammar through orthography. When speaking, on the other hand, we construct words and phrases with individual sounds, and we also use pitch change, intonation and stress to convey different meanings” (Harmer 38). So the practice is mostly suitable for casual learners but visually impaired students have to practice only through assistive tools. In this case, more than the



normal students, visually impaired students possess excellent auditory sensitivity, powerful memory, and strong language acquisition in learning English. They learn pronunciation of English words without any distraction.

The LSRW system in teaching and learning English represents Listening, Speaking, Reading and Writing which works as a structural architecture in learning English or any language. In beginning level of schooling, children may not have proper growth in understanding the sounds of person names and the differences between same spellings. For this purpose, teaching methodology has to follow a ladder mechanism like making children understand English in a step by step method. That's where they apply LSRW system to introduce languages to children. This is a traditional methodology practiced in teaching and learning both for normal learners and visually impaired students. But there are some obstacles have to be identified while implementing such system when teachers try to introduce language to visually impaired students. Some of the pedagogy followed in traditional classrooms is not possible to produce potential outcome in the language learning process of visually impaired students. However, in a classroom, reading text books, taking notes, observing vocabulary charts and the visual examples offered from teacher side are not possible for visually impaired students unless if they have any learning assistive tools. ELT was lying on Braille and audio tape methods once before the emergence of software based technology. The birth of artificial intelligence has contributed a great shift in learning assistive technology especially for visually impaired students. Once in traditional method, visually challenged students were not able to reproduce what they learnt in English like other normal students. This condition existed for many years until education was decentralized to the visually impaired students through some technologies. Now they can access materials, process them, and even they can reproduce any language related work without depending on any one. Screen readers have evolved to produce synthesized speech output apart from basic screen reading, AI assistants offer real time conversational practice, writing practice and even they provide corrections and feedback without the need of a human teacher. Generation Zee children either normal or visually impaired learners have the accessibility to learn language concepts at anywhere and anytime without the dependency of any teacher. Such a way, the emergence of technology, especially Artificial Intelligence tools have brought notable changes in the culture of teaching and learning. Gradually, institutions around the world started to adapt these technologies for the welfare of normal and visually impaired learners in schools and higher education. Soon it will become an inevitable thing around the world where learners are willing to learn new things in a new way. So, this paper is about to explore the integration of AI and other assistive tools in teaching and learning ELT and the impact of such things in the learning progress of visually challenged students. This process of research is based on LSRW skill applied in ELT to identify the developments in the second language acquisition by visually impaired students.

2. Research Methodology

This study is designed on qualitative research methodology. This method is about to offer literature review based on peer-reviewed articles, research journals and reports from various institutions. The collection of data is about AI, ELT and the learning process of visually impaired students. Most of the references are derived after 2015 since the development of technology in LLM started to expand from that year onwards. Instead of depending on any empirical data sources, this study continues on the basis of qualitative research. In this research process, the primary preference is given for sources which are



available in open platforms that are Google Scholar, PubMed, Scopus, JSTOR, and Research Gate. The search terms like ‘Impact of AI in visually challenged students’, ‘modern assistive tools applied in LSRW skills’, ‘application of screen readers in ELT’, and ‘language processing’. Mostly sources are taken from recently published articles that cover the above mentioned terms. The LSRW skill concept is analyzed through ELT, pedagogy and the implementation of technology in educational institution. This paper gives the current information about the condition of visually impaired students who are learning English as a second language. This informative data is processed and provided with proper citation and reference. For this paper, MLA 8th edition is followed.

3. The Impact of AI and Assistive Tools in enhancing LSRW skills

3.1. Listening Skills

For both normal learners and visually impaired learners, this listening skill is the first one which is learnt from their childhood period. All children learn mother tongue and second language through replication of sounds that they receive from parents and adults. “Taking into account the historical and cultural perspective (language –teaching methods must be as diverse as are the definition of a ‘good linguist’), there seemed to be a universal consensus that these pupils were adept, at least, at languages” (Couper 6). This skill comes under primary auditory exposure and that skill is completely passive with or without their concentration. Beyond some age, students would pay their interest to listen on their favourite subjects. After the arrival of AI, this passive listening becomes a structured learning and in ELT teaching it tries to serve a purpose behind visually impaired students’ listening. AI – enabled speech recognition systems and digital voice assistants like Google Gemini, Alexa, Siri on iphone, offer live respond in English like a fellow person who speaks with someone. They are used by visually challenged students to practice their pronunciation and vocabulary listening skills with real time feedback. Since the devices are connected with cloud servers, they guide the students by answering and asking questions in a general conversation method. Author of this article in ‘Medium’ platform says, “Platforms that offer real-time assessment tools for writing and speaking, such as automated grading systems and peer review functionalities, enable me to provide immediate feedback to students” (Laghari) Visually challenged students cannot utilize the caption tool on videos and audios. Platforms like Otter.ai and Rev.com offer improvised listening accessibility by converting the classroom audio into captions that can be read via screen readers. This can be used by visually impaired students to continue their learning process in listening skill. So these students never lose any information provided from the instructor and can process the information observed in the classroom like other normal students. In a research article Arroyo-Cedeño, Carmen, et al. observe as,

Modern educational systems are based on the use of new and better teaching strategies with the purpose of motivating student learning, where technological tools are used as dynamic elements that optimize and facilitate the teaching-learning process (Arroyo-Cedeño et al. 2)

The participation of large language models (LLMs) like Chat GPT, Claude is highly helpful to visually challenged students to practice listening through large comprehension contexts. Without the support of anyone, these systems offer enough time, freedom and proper response to them in learning a language.

3.2 Speaking Skills

Visually challenged students can produce their mother tongue pronunciation well



where as the pronunciation of second language words can happen only by proper listening. In serious level, students must practice phonological accuracy, fluency and exchange of words in real time. Unlike people who are deaf, visually challenge people cannot follow any visual samples like lip movement, expressions generated through face and eyes, and body language. These barriers are eased by AI assistive tools, here also visually challenged students have to follow the instruction of what the AI programme delivers. Students have to replicate the sound that they hear. Voice based AI assistants generates queries, instructions, and dialogues by making imaginary situations which help students to develop their communication skills. There are some tools available with feedback facilities such as Elsa Speak and Speechify. Instead of digital voice assistants, these tools offer deep analysis for the delivered sentences of visually challenged students, rectification against phonology based errors. Through such tools and digital assistance, the learning outcomes of visually challenged students are successfully fulfilled.

3.3. Reading Skills

For visually impaired learners, this is a kind of skill that comes as a barrier in learning a language. They are not able to read by watching prompt or texts as other normal learners. Once, visually impaired learners were depending on Braille books or human readers to understand any text. This method would have been helpful enough to them but it was consuming more amount of time in learning process. After the emergence of technology, screen readers replaced this obstacle to them, and AI supported text to speech has eased the process of reading to visually impaired students. In a research article "Inclusive Language Learning: AI-Powered Tools for Blind and Visually Impaired Students", author Shripova says, "Text-to- Speech and screen reader tools have been very handy for the Benefit blind students. The technology helps them gain more information in digital formats (i.e. e-books, articles or online tutorials) if they hear the written text out loud" (Sharipova 33)

In the beginning, there were entry level screen readers like JAWS (Job Access With Speech), NVDA (Non-Visual Desktop Access) were supporting synthesized speech output to read the texts that are visible on the screen. So without the support of any human presence, visually impaired students could understand what they observe. Ibrahim Elshaer in a research article "Measuring the Impact of Large Language Models on Academic Success and Quality of Life Among Students with Visual Disability: An Assistive Technology Perspective." Says, "For example, real-time captioning, sign language interpretation, and intelligent navigation systems significantly enhance communication and mobility for individuals with hearing and visual impairments" (Elshaer et al.)

Like the normal learners, visually impaired students also can pursue their studies with the help of such technology. Under digital formation, they do not have to approach any librarian and ask his help. With the help of screen reading, they can access their texts from anywhere else without depending on anyone.

In some cases, the absence of digital format texts also can be accessed by OCR technology. With this the scanned image like texts are treated as readable texts which is easy to read the screen by screen readers. There are some applications like AIDEN works in this concept. They are able to find and read the information on sign boards, any physically papers with printed texts, hotel or café menus, and sometimes information found on labels also. These kinds of technologies are used to read the surrounding information that visually impaired learners can read the information around them without asking anyone. This statement reveals that, such technologies offer more information close to the reality through



reading apart from classroom textbooks. Through this their linguistic needs are met like the normal learners. Current technologies with AI have enhanced this user experience through multiple methods. For example, smart glasses that are mostly used by normal people. When a visually challenged person uses such glass, he can understand any written texts or words from board or posters. Some gadgets support live translation, so that they can understand the information in their own language.

3.4. Writing Skills

Our of all LSRW skills, this is the only skill where other three skills are used together. This is also related to muscle practice. The demand of cognitive coordination and motor skill is more in writing skills. While listening or thinking anything, normal learners have to produce, grammar, letters, sentences and logical coherence also. In this case, visually impaired students are not able to write their sentences on their own. Even in exam time, they have to depend on Human Scribe to produce their answers. Instead of using hands and motor skills, visually impaired students use voice to text transcription, AI assisted writing tools, live error finding and correction and summarization tools. Somehow they can produce their own notes as a part of language learning process like the normal learners.

Instead of functioning with basic software programme, now a days, voice to text transcription tools are working on algorithms. So they do not need to depend on keyboards and typing process. This algorithm almost eliminates any error in producing sentences and words. Because, modern assistive tools are already trained by many large language models and they can even understand minor human errors through their speech. They can understand what they try to speak even in broken words. So that visually impaired research scholars and students can generate essays, research reports, and creative posts. Since the output of these tools are highly accurate, visually impaired students do not have to depend on any human proof checkers. For example, Grammarly is available with AI support, it can now work beyond the process of checking grammar, it can perform now checking vocabularies, coherence and the composition method also. While writing some essays like argumentative, NLP (Natural Language Processing) enhances the writing skills of visually impaired students. In this case of using technology, both normal learners and visually impaired students are same. However, normal learners may or may not improve their errors when they use these tools often, where as visually impaired students learn writing skills as well as error free second language by understanding the structure of language.

The implementation of LLM has made notable changes in the learning process of visually challenged students. In the absence of a human teacher or mentor, ChatGPT like transformers would act as a screen reader, proof checker, supporter to write essay unlike the way normal people use. Here the involvement of visually impaired students is more than the regular learners. Mostly, normal learners can ignore everything after giving a prompt to produce school assignment. But only visually impaired students pay their effort and use these tools only as learning assistant. So far these LLMs are growing and making glitches and experiencing hallucinations. Such problems are checked by visually impaired students.

4. Challenges and Limitations

Whatever the changes may have happened after the emergence of AI based assistive technology in the learning process of visually impaired students, there are some notable challenges and limitations have to be addressed. First one is the cost based issues in affording and accessing such facility. It is not about installing hardware but the software. Like normal human customers, visually impaired learners also have to consider premium subscriptions,



for advanced level of usages. This is usually found in ChatGPT, Gemini, Claude, Grammarly and Screen readers also. Here the challenge comes under the context of low income. In a research paper about VLC visual light communication, authors Lavric, Alexandru, et al. observes, “Considering the major impact blindness has on daily life, human society has struggled to develop solutions that can improve visually impaired persons’ daily experience. Therefore, different technologies have been developed with the purpose of providing them with information that cannot be preserved by sight” (Lavric et al.)

Another challenge is both on teachers’ side and the visually impaired learners’ side. Both have to be trained in using AI assistive technology in teaching ELT in the classroom. They have to adopt and make necessary changes in applying their pedagogy in the class rooms. In this case, chalk and talk method would not be required. Research says that teacher who practiced base pedagogy methods in the classroom, still do not adopt themselves in learning AI assistive tools in teaching ELT. From the study of Kocyigit and Artar, these teachers who teach ELT have to come forward and try to learn modern AI assistive tools for the development of visually impaired students’ language learning process. (Kocyigit and Artar 692). One more thing can also be partially considered as a challenge which is related to AI application UI and UX. They are mostly designed for the normal users’ perspective only. Since the companies attract such users, it does not consider the visually impaired users concern. Very few applications are made for the normal users as well as Braille compatibility users. Then the last one is data privacy. In teaching and learning ELT, both teachers and learners heavily depend on modern technology. Even sighted people may use other methods to share and protect sensitive data but that concern is not applicable for visually impaired learners. AI assistive tools and applications should be made with such specific privacy policy related to visually impaired users and their protection.

5. Under LSRW Framework the improvement in Spelling and Vocabulary Learning Process in ELT of Visually Impaired students

Based on the foundational frame work of LSRW, in any language, both normal learners and visually impaired learners have to practice spelling and vocabulary improvement. Without this any second language acquisition will be not smooth enough to develop communication. In ELT, from primary to secondary level and also in higher secondary level, a teacher would focus on introducing more vocabularies to the students because that is the fundamental material of any language learning process. English can be understood by making a comparison with the vocabularies of students’ mother tongue and the second language. In this case, teacher has to put more effort to make visually impaired students understand about nouns of things, animals, birds, insects and abstract things to enhance their grammar. The written text can be reproduced by spelling which is like a bridge to bring phonological knowledge to the students in ELT. So the flash card method, charts on the walls, colour boxes with English letters are mostly used pedagogy in ELT classroom. Such things are not possible for visually impaired students, this makes a negative impact in the learning process of visually impaired students. There, AI supported assistive tools have brought a change or solution to them. Only through audio most of the tools offer the same support to improve the spelling, pronunciation and vocabulary development. As mentioned already in this research paper, tools like JAWS, NVDA and advanced screen readers produced human like synthesized speech output where a student can learn the entire content of the materials as well as the spelling, pronunciation of native speakers in English. This rich form gives learners a gateway to learn vocabularies, pronunciation and spelling found in



newspapers, research articles and subject text books. Without the support of anyone, visually impaired students could easily learn more amount of vocabularies, spelling and pronunciation.

Apart from the role of producing the sounds of the texts, these advanced AI tools make visually impaired students get involved in learning English language like a way that Socrates discussed with his students to improve their learning. That pedagogy is based on dialogues, the same concept is utilized by LLM base Transformers like giving and asking definitions, demanding example sentences, finding the related vocabulary from word families, tracing etymologies, synonyms and antonyms through this method. This method reflects a kind of semantic research from centralized vocabulary knowledge to deep level knowledge. Only limitation is the absence of visuals, because visually impaired students can learn the above mentioned things through audio channel only. In this case there are some dedicated application software to perform vocabulary learning. Quizleet, Anki and Vocabulary.com platforms have improved learning process along with screed readers. They have replaced the role of human presence by giving repeated drills, sentence examples with multiple contexts, tasks based on audio method. Authors Villalba, Karen, et al in a research article say, “While using task-based lessons, meaning becomes the primary target. Real-world scenarios attempt to cover any linguistic skills and psychological process involved, such as reasoning, deducing, selecting and sequencing” (Villalba et al.) Like normal spelling and vocabulary learning, these tools make pauses and intervals between letters and words to make the learner recall his memories. Such a way AI tools enhance pedagogical competency in ELT for visually impaired students. In recent studies, it is observed that these mobile assisted vocabulary learning offer great improvements in vocabulary learning than the outcome produced from traditional classroom teaching method. (Mahdi, 2018).

6. Development of Spelling Competence through AI supported Phonological Encoding

This competence is showing a great difference in language learning process of visually impaired learners than normal learners. Normal learners can develop their spelling recognition skill through embedded visual learning process such as exercises on boards, games, and other methods. So repeatedly they learn through visual codes and learn to overcome errors. This is not possible for visually impaired students. Here the competence of spelling can be developed by some kind of Kinaesthetic process. This one follows the same method of encoding and decoding contexts based on Braille method but here the sequences of sound replace that. The standard system of writing that is orthography will be errorless when a student is fully aware of right spelling in right order. This concept is applied to visually impaired students through phonological method. For example, some words like necessary, permanent, training, beginning, occurrence can be distinguished by single or repeated letters which cannot be identified by sounds. So visually impaired students also should know how to pronounce and how to reproduce silent letters in written formation. In this process, AI assisted tools will help visually impaired students by text to speech method by producing the sound of words letter by letter. They can listen and observe the sequence of the letters and can generate a connection in their memory between phonological form and the sentence structure. All the retro screen readers and modern AI readers have the facility to set the application to pronounce the letters individually and properly. This part of learning process makes the students improve their spelling competency.

In normal screen readers, there is a drawback to identify the error in letters or spelling since they are programmed for one task. But AI supported spell-checking software comes



with auto correction facility. So such tools will give immediate feedback to users like visually impaired students when they commit spelling error. AI voice will immediately correct the user by distinguishing the difference between right form of pronunciation and the misspelt one. Along with this, those tools will offer explanation behind the minor changes in spelling and pronunciation especially in homophones and homonyms. This system of learning process is highly useful for normal users also. Such tools can rectify any spelling errors in any written document produced by the visually impaired learners for their research projects. The tools supported by AI, can also list out common errors behind the word formation and spelling of any sentence structure. On the spot, live feed back system would rectify the errors committed by the visually impaired learners. Mostly the human teacher in the class can do this. So, these tools reduce the dependency of human support in the learning process of visually impaired learners. For example, couch and potato can be understood individually as a furniture and vegetable. Nevertheless, context wise when they combine it will stand 'a person who is addicted to watch television'. Such presence of mind reaction can happen in the classroom from teacher's mind. However, any LLM based AI assistants are trained to guide its user through this method.

7. The Metalinguistic Ability under LSRW

This ability is nothing but the ability of human who can analyse a language by extracting its structure from its context and handle phonological awareness, syntactic awareness and understand the mechanism of a language. Visually impaired learners develop their phonological awareness and the phoneme (the sound structure of units) by listening and speaking with AI assisted tools. This awareness is the foundational stone both for spelling and vocabulary acquisition. Both normal and visually impaired learners can deconstruct set of words into phonemes, practice rhyme pattern, alliteration, and assonance in order to achieve the higher accuracy in spelling and vocabulary development. Here, such literary devices are not merely useful in initial level of learning for visually impaired students. They have to focus on the accuracy of their spelling and pronunciation to develop their vocabulary. This above mentioned phonological awareness is contributed by AI assisted tools like text to speech systems contribute phoneme based pronunciation guidance to visually impaired learners. It also supports to offer mapping skills to develop spelling accuracy based on phoneme and grapheme. So not from the text shown on the screen but from the statements produced from the visually impaired learners side, these AI integrated tools like ELSA, offer more information by giving phonological analysis from the content delivered from the user side. This impact happens because of AI assisted tools only not possible in simple screen readers. In this method, users like visually impaired students will be informed when they commit any pronunciation error because of their mother tongue influence. These tools will guide them towards the accuracy of target language only. Such a way a learner can practice error less spelling formation and pronunciation of English language. Students like visually impaired can develop their vocabularies and decode right pronunciation by adapting phonological awareness. More number of vocabulary acquisitions gives a broader space to develop their vocabulary knowledge. This cycle will improve the learning process of English in ELT.

8. Enrichment of Vocabularies based on Contexts

Under the framework of LSRW, the listening area is also improved after the arrival of AI powered applications especially for visually impaired students. Apart from normal screen reading, phonological reproduction, spelling accuracy, visually impaired learners are



introduced to new vocabularies through server updates. New features are introduced so that their learning process will continue without any drawbacks. Beyond the presence of text books, newspapers and research articles, podcasts, audio books and audio based story narrations are new arrivals in the learning process of visually impaired students. There are many examples for this type found in AI supported assistive tools. Google Gemini, Alexa, and Siri can act as conversational agents like the way a human interacts with others. In the absence of parents or teachers, schoolchildren and college students can develop their context based vocabulary knowledge by making interaction with such agents. However, these tools are gradually improving themselves merely like human. Visually impaired learners have to operate these agents in live to learn more contextual meanings of any word. But some AI applications offer some bundled services under one roof such as Google notebook Lm. This application is highly useful for both English teachers and the students who learn English. When a student would like to learn any essay, poetry or prose, learner can upload the pdf in this LLM. This application will immediately generate overall summary. The functionality of this tool moves beyond making summary, it can give mcq questions, general WH questions with answers, downloadable audio summary, mind mapping graphics and even it can produce podcast format audio summary like human to human interaction with the power of AI generated voice. In this process, visually impaired learners can save a lot of time in producing notes and summaries. While learning the summary of any text in any one of this method, visually impaired learners can learn more new contexts of the same content. This is a perfect replacement against the presence of any human instructor.

9. Vocabulary Adaptation and Personalised Learning

This is nothing but a kind of personalised learning process unlike the traditional classroom teaching method. For normal students or visually impaired students, a traditional classroom that teaches ELT follow the same pedagogy that is group based learning and the slow learners' queries will be ignored. This is a kind of compromise for learners group. In classroom the projection of visual materials would not enhance the lexical profile of visually impaired learners. But, the implementation of AI powered assistive tools like individual computers with audio facility can meet the requirements of the lexical profile of visually impaired students. In the absence of teacher, AI based adaptive learning system, can assess the improvement of language of visually impaired learners through the data stored after their performance. With this, AI tools can identify the gaps in English language learning, and can adjust or modify the progress of developing the language learning skills of visually impaired students. This is a kind of personalised learning process in ELT unlike the traditional classroom teaching methodology. Even, visually impaired students can be free in rising questions and clarifying their doubts after the class hours also. Whatever the AI tools that they follow, they can maintain a personal data base for their learning process. current AI tools have the capacity to recall the conversations and contexts based on the history. ChatGPT has the option to teach vocabulary for both normal and visually impaired students. There is an option to set the chat answers in conversation method that allows the users to raise their questions like the way they ask in a classroom to the human teachers. For ELT, tools like these software, are contributing their service beyond the level of visually impaired students. Students who are studying TESOL and Business English courses also use such facility to expand their horizon.

10. Conclusion

This paper finds useful impacts on visually impaired students in learning ELT through



the learning process supported by AI assistive tools. Auditory tools have increased the language leaning skill of visually impaired learners through spelling instruction, feedback system and live rectification. This shows the significant impact in teaching English language for visually impaired students by adapting AI assisted tools. Gradually, traditional classrooms are evolving towards the AI based pedagogical shifts. In a research article "Enhancing Educational Accessibility for Visually Impaired Individuals through Artificial Intelligence: Challenges and Opportunities" author Filipova claims, "Current research focuses on creating even more intelligent and adaptive systems that can provide better support and greater independence for people with visual impairments" (Filipova 26). Printed text materials are uploaded as softcopies for the visually impaired learners in order to read them through screen readers. Visual flash cards are turned as audio based files, spelling tests are operated through screen reader software with typing facility for visually impaired students. Notebooks Lm like AI tools are used to narrate text materials and to generate conversational practice. Such tools are erasing any types of barriers around the world in learning English language especially for visually challenged students.

Once there was no accessibility for visually impaired students to perform spelling task based competitions since the competition is mostly conducted for normal students. There was no platform to acknowledge their skills in language which was offered to normal learners. This made a negative impact in lexical development of visually impaired learners. This shows that the visually impaired students are cognitive deficient, but AI technology has turned every impossibility into possibility for visually impaired learners. It has made them to perform any language based tasks, vocabulary or spelling based tasks. AI assisted tools make visually impaired learners more capable in learning English as a second language than normal learners. Through this support such students walk towards more opportunities in learning new languages.

In order to develop the learning process of visually impaired students, all educational institutions must invest on developing AI based technological infrastructure. Then the institutions should conduct training workshops for teachers to learn how to utilize such new AI assistive tools in teaching ELT for both normal and visually impaired learners. (Kocyigit Reference 692). The growth ration of higher education is moving in rapid speed after the emergence of AI technology. So institutions which are slow to implement this technological infrastructure will be far behind in developing the learning process of visually impaired students. Research scholars who would like to pursue their research in this concept, may focus on the outcome of visually impaired students especially in spelling and vocabulary based on the current AI tools that will exist in future. However, so far this study understands the ration of visually impaired learners comparatively so thin than normal learners. But the impact of Artificial Intelligence on listening, speaking, reading and writing skill among visually impaired learners are tremendous in every day learning process. Whatever the technological tools have been discussed in this paper, visionary industrialists like Elon Musk, investing money in integrating chip inside human brain which will help people who can't express their thoughts and feelings. Soon, such technology may attribute real light for their vision.

References

- [1] Arroyo-Cedeño, Carmen, et al. "Technological Tools in English Language Teaching Activities to Deaf Students." *International Journal of Humanities, Literature & Arts*, vol. 7, no. 1, Jan. 2024, p 2. DOI: 10.21744/ijhla.v7n1.2235.



- [2] Couper, Heidi. "Teaching Modern Languages to Visually Impaired Children." *The Language Learning Journal*, vol. 13, no. 1, 1996, p. 6. DOI: 10.1080/09571739685200031.
- [3] Elshaer, Ibrahim A., et al. "Measuring the Impact of Large Language Models on Academic Success and Quality of Life Among Students with Visual Disability: An Assistive Technology Perspective." *Bioengineering*, vol. 12, no. 10, 2025, article 1056. DOI: 10.3390/bioengineering12101056.
- [4] Filipova, Elena. "Enhancing Educational Accessibility for Visually Impaired Individuals through Artificial Intelligence: Challenges and Opportunities." *International Journal of Computer Applications*, vol. 186, no. 67, Feb. 2025. DOI: 10.5120/ijca2025924663.
- [5] Harmer, Jeremy. *The Practice of English Language Teaching*. 4th ed., Pearson Longman, 2007.
- [6] Laghari, Riaz. "AI in Revolutionizing English Language Teaching." *Medium*, 18 Feb. 2025, medium.com/@riazleghari/ai-in-revolutionizing-english-language-teaching-1bab0bd29d2d. Accessed 29 May 2026.
- [7] Lavric, Alexandru, et al. "A Comprehensive Survey on Emerging Assistive Technologies for Visually Impaired Persons: Lighting the Path with Visible Light Communications and Artificial Intelligence Innovations." *Sensors*, vol. 24, no. 15, 2024, article 4834. DOI: 10.3390/s24154834.
- [8] Mahdi, Hassan Saleh. "Effectiveness of Mobile Devices on Vocabulary Learning: A Meta-Analysis." *Journal of Educational Computing Research*, vol. 56, no. 1, 2018, pp. 134–154. DOI: 10.1177/0735633117698826.
- [9] Sharipova, Yokut Qudratillayevna. "Inclusive Language Learning: AI-Powered Tools for Blind and Visually Impaired Students." *Zenodo*, 8 Apr. 2025, pp. 32–36. DOI: 10.5281/zenodo.15175502.
- [10] Villalba, Karen, et al. "Eyeland: A Visually-Impaired Accessible English Learning Application Using a Design-Based Research Framework." *IEEE Access*, vol. 12, 15 Aug. 2024, pp. 1–15. DOI: 10.1109/ACCESS.2024.3444741.

Author (s) Contribution Statement: Nil

Author (s) Acknowledgement: Nil

Author (s) Declaration: I declare that there is no competing interest in the content and authorship of this scholarly work.



The content of the article is licensed under Creative Commons Attribution 4.0 International License.