CHAPTER 10: REVOLUTIONIZING FOREIGN LANGUAGE TEACHING IN THE DIGITAL AGE

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1. Introduction

Rapid technological advancements have dominated modern society, and technology has a pervasive influence on many aspects of human life, including education. There has been a noticeable increase in the use of technology-based teaching aids in the field of language teaching. Accordingly, various e-learning technologies are accessible for incorporation into English language teaching. Across diverse regions globally, education authorities and academic institutions have dedicated considerable resources to enhance the integration of the Internet in its various manifestations (such as electronic books, simulations, text messaging, podcasting, wikis, and blogs). Among these tools, chatbots stand out due to the utilization of various artificial intelligence (AI) models. Currently, these models play a supportive role in foreign language instruction within diverse educational contexts. This includes applications in English as a Foreign Language (EFL) settings and across various educational levels, as highlighted in previous studies (Fitria, 2021; Hubbard, 2013). AI tools play a vital role in the teaching profession, providing educators with a means to improve students' learning experiences. When talking about technology in education, we frequently refer to 'integration.' Given how ubiquitous technology is in our everyday lives, it's essential to rethink the conventional method of merely adding technology to the curriculum. The focus should be on weaving technology into teaching practices to enhance the learning process. In essence, technology becomes a fundamental part of the learning experience, presenting a significant consideration for teachers—from crafting learning experiences to the actual teaching and learning processes (Eady & Lockyer, 2013). Hence, integrating technological tools into English teaching is essential to meet the needs of today's generation, where technology has surpassed every facet of daily life. This essential requirement mandates a collaborative effort from both educators and learners to integrate technology into their learning and teaching environments. Achieving this integration necessitates a comprehensive understanding of how technology can be effectively incorporated into the English language classroom. Previous research has emphasized the advantages of technology in facilitating the learning and acquisition of English language skills. Nevertheless, it is crucial to acknowledge that assessing learning outcomes holds paramount

significance in the realm of teaching. As a result, this chapter endeavors not only to emphasize the utilization of technology in English language teaching but also to offer insights into how technology can be employed to assess learning. The goal is to offer a nuanced view of the dual function of technology, highlighting its use as a learning facilitator and as an important tool for assessing educational outcomes.

2. Literature Review

2.1. Technology in L2 Reading

Reading comprises three fundamental components: the reader, the text, and the interaction between the two. The first component is the reader themselves. The second component is the text, which is static and possesses various features that affect readers' understanding, including vocabulary, syntax, grammar, and organizational structure, all of which can vary based on the text's level of formality. The final phase of the reading process is the interaction between the reader and the text. This emphasizes that reading takes place when individuals engage with a text, assigning meaning to the written symbols it contains (Nation, 2001). Consequently, there is a widespread consensus that reading encompasses a range of factors that interact with one another. Chun and Plass (1997) suggested that this complexity is even more challenging for L2 readers. In education, many efforts have been made to help L2 readers understand texts better, using insights from research. For example, Clarke and Silberstein (1977) argued convincingly for teaching reading strategies based on a psycholinguistic model of reading. Visual aids like pictures, videos, sounds, and diagrams have also been recognized for their potential to help in the reading process by activating relevant background knowledge (Chun & Plass, 1997). In recent years, there has been a growing interest in using computers to improve reading comprehension skills. In this part of the chapter how technology affects the L2 reading will be highlighted.

2.2. Digital reading in L2

In the era of widespread screen use, digital text has become increasingly common. This shift is especially advantageous for those learning a foreign language, as a multitude of authentic texts in the target language are now easily accessible with just a click, a convenience that was once restricted (Lee et al., 2020). As a result, developing reading skills in a second language (L2) has relied significantly on digital reading which the learner can easily access at any time anywhere, and offers a room to choose one of the authentic texts in terms of their interest, needs, etc. Besides, the interactive nature of digital reading, incorporating features like hyperlinks and multimedia elements, enhances engagement and active learning (Tang et al.,

2022). In addition to its inherent interactivity, digital reading offers learners a unique opportunity to shape and personalize their reading experience through individualized features. Besides, the collaborative and social features of certain digital platforms could be explored, emphasizing how learners can interact with peers, share insights, and participate in online language communities to further enhance their language skills. The flexibility provided by customization options empowers readers to tailor various aspects, such as adjusting font size and background color, ensuring a more comfortable and personalized engagement with the text. This adaptability aligns with research findings indicating the positive impact of digital reading on second language (L2) reading acquisition. An illustrative study by Esmaeili Fard and Nabifar (2011) analysed the reading comprehension levels of 40 English as a Foreign Language (EFL) students in Iran, demonstrating better outcomes for those using digital readers. Furthermore, recent research by Al Khazaleh (2021), delves into the effects of digital reading on English reading acquisition, highlighting consistently positive outcomes. Therefore, it should be better to show some digital reading platforms where the readers can customize, adapt, and personalize the learning process. The following digital platforms utilize the Artvive application, which employs augmented reality (AR) technology to enrich user interaction with visual content. By scanning an image that contains AR markers with the Artvive app, users can effortlessly trigger a video on their device screens (https://www.artivive.com/).

2.2.1. Scribd

Scribd operates as a subscription-oriented service, granting entry to an extensive repository of e-books, audiobooks, magazines, and documents. It covers a wide array of genres and subjects (https://audiobooks.com/).

2.2.2. Librivox

Librivox provides complimentary audiobooks of works in the public domain. Volunteers contribute their voices to these audiobooks, creating a valuable resource for enthusiasts of classic literature. Readers can discover numerous digital platforms online to enhance their English language teaching reading proficiency (https://librivox.org/).

2.3. Adaptive Learning Systems

Adaptive learning systems within the realm of computer-mediated instruction are commonly referred to as intelligent tutoring systems (ITSs). These systems dynamically tailor e-learning content, pedagogical models, and human-computer interaction to align with the

distinct objectives, needs, and preferences of individual users, fostering effective learning and teaching (Lin et al., 2023). Adaptive learning systems in second language (L2) reading refer to educational technologies designed to personalize the learning experience based on individual learners' needs, progress, and preferences. These systems utilize advanced algorithms to assess learners' strengths and weaknesses, adjusting the content and difficulty level accordingly. By tailoring instruction to the specific requirements of each learner, adaptive learning systems aim to optimize engagement and comprehension. The benefits of such systems lie in their ability to provide targeted and customized support, fostering a more efficient and adaptive learning process (Riasati et al., 2012). Learners can receive content at an appropriate challenge level, receive real-time feedback, and benefit from personalized strategies, ultimately enhancing their L2 reading skills more effectively and engagingly. By assimilating data on students' learning styles, preferences, and performance, obtained through the tracking of their knowledge, work, and feedback, the system can draw inferences regarding their strengths and weaknesses. Subsequently, the system can suggest additional tasks or materials to further enhance the learning experience. Consequently, recommending certain digital platforms on this topic to the readers would be advantageous.

2.3.1. Promova

Promova is an application designed for reading in a second language (L2). It provides a feature that allows users to click on a word they struggle to recall while reading to access its definition, thereby improving reading comprehension. Besides, the app determines the students' level to prepare some exercises to enhance learning *(https://promova.com/)*.

Figure 1. Promova: personalized language learning tool *(https://promova.com/)*

2.3.2. Achieve3000

Achieve3000 serves as a literacy platform that adjusts reading materials to match the unique reading levels and preferences of students. It spans across various subjects with a focus on enhancing comprehension skills (https://achieve3000.com/).

Figure 2. Achieve3000: multi-device literacy platform for personalized learning *(https://achieve3000.com/)*

2.3.3. ReadTheory

ReadTheory stands as an online tool for adaptive reading comprehension. It presents passages and questions aligned with the user's reading proficiency; tailoring difficulty levels based on performance for a personalized learning journey *(https://readtheory.org/)*.

Figure 3. Readtheory: adaptive reading comprehension tool *(https://readtheory.org/)*

2.3.4. Imagine Learning

Imagine Learning provides adaptive language and literacy programs tailored for English language learners. The content adapts according to students' advancements, offering interactive exercises to enhance their reading skills *(https://www.imaginelearning.com/)*.

Figure 4. Imagine learning: adaptive language and literacy tool *(https://www.imaginelearning.com/)*

3. Technology in Listening

Listening is an essential skill that forms the basis for students to successfully develop and use their other language abilities helping to reduce potential challenges in speaking. By actively engaging with spoken language, learners gain crucial input that enhances their understanding and fluency (Stæhr, 2009). This skill not only supports their ability to articulate thoughts clearly but also fosters better comprehension of nuances in conversation. Therefore, listening is indispensable in the language learning process, as it equips students with the tools necessary for successful communication. Furthermore, learning cannot begin until one has a grasp of the information that has been received. The process of listening plays a crucial role in language learning. According to Halat and Özbay (2018), there is a direct correlation between speaking and listening, and people with poor listening skills will struggle to communicate effectively. Thus, second language acquisition depends on understanding the content heard, which constitutes one of the essential skills for learners to develop. According to Jones (2024), comprehension of spoken language involves an interpretive process wherein the listener actively creates meaning by utilizing two primary knowledge bases: linguistic (such as phonological, lexical, syntactic, semantic, or pragmatic knowledge) and non-linguistic (like understanding the context, topic, or general knowledge of the world). As a result, achieving proficiency in this skill necessitates consistent exposure to the language, providing learners with frequent opportunities to listen to the target language. Historically, the sole method for

refining listening skills involved students listening to their language instructors in the classroom. Unfortunately, outside the classroom, students had limited exposure to the English language due to the linguistic differences between their native languages and the target language. Nevertheless, the 21st century has provided opportunities for pervasive exposure to the target language, thanks to technological advancements. Students use technology to develop socially and proficient communicators in the target language; teachers use audio-visual technologies extensively and use pre-listening exercises, as well as subsequent listening and inferential exercises when working with audible texts. This section of the chapter will focus on presenting various technological advancements that enhance listening comprehension in second language acquisition.

3.1. Interactive listening tools

Duolingo

Duolingo is a platform that allows learners to listen to the target language through activities such as interactive lessons. It employs a gamified approach, making language learning enjoyable and flexible for students *(https://www.imaginelearning.com/)*.

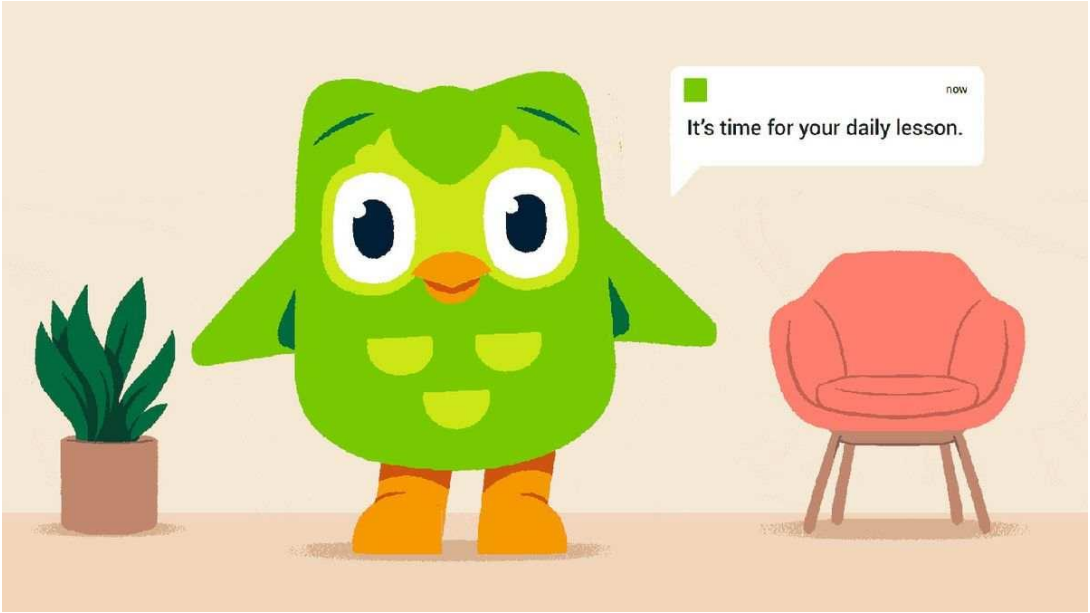


Figure 5. Duolingo: engaging language learning tool *(https://tr.duolingo.com/)*

FluentU

It employs authentic videos from real-world sources like news clips, music videos, and movie trailers. The platform incorporates interactive subtitles and quizzes, offering a comprehensive approach to strengthen both vocabulary and listening skills *(https://www.fluentu.com/)*.

Figure 6. FluentU: Immersive language learning through real-world videos *(https://www.fluentu.com/)*

ELLLO (English Listening Lesson Library Online)

It provides learners with a repository of audio and video lessons. Featuring comprehension quizzes, it enables learners to hone their listening abilities by exposing them to diverse accents and variations in the English language *(https://www.elllo.org/)*.

Figure 7. ELLLO teacher: interactive english listening resources for educators *(https://www.elllo.org/)*

In summary, the infusion of technology into language learning not only enhances proficiency in listening skills but also revolutionizes the language acquisition journey. This integration provides learners with vibrant and immersive encounters in the target language.

4. Technology in Writing

According to Nunan (1991), writing is an extremely complex cognitive activity in which the writer is required to demonstrate control of variables simultaneously. At the sentence level, these include control of contents, format, sentence structure, vocabulary, spelling, and letter

formation. Beyond the sentence, the writer must be able to structure and integrate information into cohesive and coherent paragraphs and text.

Writing is one of the productive skills and is crucial for effectively expressing thoughts and ideas, enabling individuals to convey their viewpoints with clarity and precision. The essence of developing writing skills lies in the ability to express ideas in a systematic and reflective manner, with a key measure of learning success being the capacity to articulate concepts constructively in writing. Therefore, the development and enhancement of writing abilities present an important challenge for teachers and students in the realm of second language learning. The demands of writing, which require a significant time commitment, frequently find limitations within the restricted time frames of school hours. However, the emergence of technology has brought about revolutionary possibilities, providing students with specific time and space to enhance their writing skills. In modern teaching, teachers have been increasingly recommending the development of personal blog sites as a teaching tool so that students can genuinely practice writing. Beyond blogs, a significant emerging platform is represented by chatbots, which are a developing means of encouraging writing engagement.

4.1. Chatbots

A prevalent aspect of artificial intelligence is represented by chatbots, which are computer programs created to converse with users in a natural, human-like manner through text and voice interactions (Ashfaque et al., 2020). In English language education, chatbots have been used as a tool to improve language proficiency. Students can practice their language skills anytime and anywhere due to the availability of the chatbots around the clock. As a result, the students can practice their language skills and identify any linguistic gaps with the support of this real-time assistance. AI-powered chatbots can provide language input and help with regular conversation practice. With the chatbots, students can converse in the target language, which enhances their communication and writing skills. Employing customized exercises and constructive feedback, chatbots play a facilitative role in refining students' writing skills, providing specific corrections and suggestions that contribute to the enhancement of sentence structure, vocabulary utilization, and overall coherence. A notable illustration of this pedagogical approach is evident in a study conducted by Lin and Chang (2020), which delved into the utilization of a chatbot named Chatbot DD. The study outcomes underscored that the incorporation of a chatbot as an adjunct instructional tool substantially elevated writing skills. Students acknowledged the pivotal role of the chatbot in identifying and rectifying writing issues, thereby augmenting their holistic writing proficiency.

5. Technology in Speaking

Among the productive skills, speaking is paramount, as it serves as a primary mode of communication and expression. Acquiring speaking skills is a vital prerequisite in the second language acquisition process since the language is commonly considered as a tool to 'communicate'. Speaking is a multifaceted cognitive endeavor, involving the simultaneous integration of various mental skills and the utilization of working memory to manage words and concepts, all while engaging in self-monitoring. Teachers, when devising speaking activities, must consider three pivotal cognitive processes outlined by Levelt (1999). First, conceptualization demands the speaker's ability to choose pertinent content and ideas, relying on sensory imagery and inner speech. This encompasses initiating or sustaining a topic within various spoken interactions, requiring an awareness of the cultural and social context to select language appropriately. In essence, learners necessitate sufficient background knowledge to express themselves meaningfully. Second, formulation entails the speaker's proficiency in expressing content, encompassing knowledge of lexico-grammatical structures, cohesive stringing of words, and an understanding of how spoken genres unfold logically. Learners must possess adequate linguistic knowledge to convey their intended meaning. Third, articulation involves the physical process of conveying selected ideas, requiring proper use of the mouth, teeth, and tongue. This process, while physical, is intricately connected to memory, conceptualization, and formulation. Competent speakers have automated pronunciation, enabling them to emphasize sounds for meaningful communication.

Pronunciation, characterized by the ability to articulate sound patterns accurately, stands as a critical skill for conveying messages clearly and comprehensibly, ultimately fostering effective communication. Given the paramount importance of acquiring both speaking and pronunciation competencies, the integration of technology offers learners a valuable space for skill enhancement. This part of the chapter will illuminate the integration of technology aimed at improving speaking and pronunciation skills.

5.1. Tech-Based Speaking Applications

Technology provides learners with the opportunity to engage in online communication, a valuable resource for improving speaking skills, especially when finding native speakers in the target language is a challenging task. Several applications facilitate this learning journey:

HelloTalk

HelloTalk facilitates connections with native speakers for language exchange through voice messages. This platform empowers learners to hone their pronunciation and gain valuable feedback from native speakers *(https://www.hellotalk.com/)*.

Figure 8. HelloTalk: language exchange platform for real-time communication *(https://www.hellotalk.com/)*

Speechling

Speechling is designed to enhance speaking and listening skills, offering personalized feedback on pronunciation. Learners can benefit from dedicated exercises aimed at practicing and refining their speaking abilities *(https://speechling.com/)*.

Figure 9. Speechling: pronunciation and speaking practice for language learners *(https://speechling.com/)*

Busuu

Busuu provides speaking exercises that enable learners to record and compare their pronunciation with native speakers. This interactive feature is coupled with feedback mechanisms, offering learners insights into their spoken language proficiency (https://www.busuu.com/tr)

5.2. Computer-Assisted Pronunciation Teaching

Computer-Assisted Pronunciation Training (CAPT) is an effective instrument that gives users effortless access to their personal pronunciation skills and those of others (Mahdi & Al Khateeb, 2019). Its primary objectives include directing attention toward phonology intricacies and facilitating the acquisition of novel pronunciation patterns, as emphasized by Liu and Hung (2016). CAPT programs present numerous advantages compared to traditional methods, encompassing features such as flexible teaching schedules (anywhere/anytime), personalized instruction tailored to individual needs, meticulous progress tracking, and the ability to engage in self-paced learning, an illustrative study by Seferoğlu (2005) delves into the efficacy of accent reduction software within advanced English classes, particularly in enhancing university students' pronunciation skills. The findings underscored a noteworthy enhancement in the experimental group, especially in circumstances where access to native speakers was limited. This research highlights the instrumental role of CAPT in fostering substantial improvement in pronunciation, providing an alternative and effective avenue for learners in the absence of native-speaker interaction.

6. Technology in Grammar Skills

The acquisition of grammar in the context of second language learning has consistently been regarded as an essential component, despite the evolving emphasis over time. Throughout various periods, the significance attributed to grammar teaching and learning has endured as a fundamental requirement in the realm of acquiring a second language. The instruction of grammar involves various methods aimed at directing learners' focus to grammatical forms. This facilitation is designed "to assist them in grasping the structures metalinguistically and/or incorporating them into comprehension and/or production, ultimately leading to internalization" (Ellis, 2006, p. 84). Grammar knowledge in the target language is a necessity for meaningful communication which is the goal in the field of second language acquisition. Dontcheva-Navratilova (2013) underscores the significance of purposeful communication embedded within linguistic structures. She characterizes the exploration of grammar as the examination of the "system of rules and principles governing the structure and significance of words, phrases, clauses, and sentences" (p.1). However, the techniques for teaching and learning grammar have changed throughout time since there was a shift from the grammar-translation method which is considered as a traditional method to the communicative method. Thus, grammar instruction has evolved beyond the rote memorization of rules or scripted dialogues. It currently focuses on aiding learners in cultivating their communicative

competence, involving tasks that facilitate recognition and heightened awareness of grammatical forms and their application. Consequently, the integration of technology becomes a pivotal aspect of modern language education since teaching language exclusively through print-based means does not give students the experience and practice they require to build the language skills they will require in the future (Bikowski, 2018). Here are the additional technological tools available for grammar:

NoRedInk

NoRedInk provides tailor-made grammar and writing exercises designed for students. It adjusts to individual requirements, concentrating on refining writing abilities through specific practice *(https://www.noredink.com/)*.

Figure 10. Noredink: personalized grammar and writing practice platform *(https://www.noredink.com/)*

Lingodeer

Lingodeer offers grammar-focused lessons in various languages. It combines grammar explanations with interactive exercises, enhancing the overall language learning experience (https://www.lingodeer.com/)

7. Technology in Vocabulary Skills

Vocabulary learning is an essential part of the second language acquisition process to convey the message in the target language (Schmitt, 2000). Comparable to other cognitive activities, the acquisition of new vocabulary demands mental engagement that encompasses crucial memory systems (Reiber-Kuijpers et al., 2021). The initial step involves the perception of novel information within the visual or sensory store, followed by a portion passing through the short-term memory store (or working memory), culminating in its eventual retention in the long-term memory store (Nation, 2001). Since vocabulary acquisition heavily relies on

memory, it has been considered as a challenging task, and the attempts to provide effective vocabulary teaching/learning have been crucial in the realm of the second language acquisition process. Apart from the techniques including preparing flashcards, visualization, and merely memorization, technology-oriented techniques have been at the forefront in this new digital era (Ma, 2019). Here are examples of the additional technological tools available for vocabulary:

Memrise

Memrise employs memory-enhancing techniques and interactive games to assist users in learning and retaining vocabulary. It spans across a broad spectrum of languages and subjects *(https://www.memrise.com/)*.

Figure 11. Memrise: interactive vocabulary learning platform *(https://www.memrise.com/)*

Mango Languages

It provides courses that focus on acquiring vocabulary, encompassing an extensive array of languages. It integrates authentic real-world conversations to augment the learning experience *(https://mangolanguages.com/)*.

Figure 12. Mango languages: comprehensive language learning through real-world conversations
(https://mangolanguages.com/)

8. Measurement Technologies in Language Learning

In the previous sections, the chapter delves into the technological advancements in the field of language teaching/learning by providing some digital platforms that can enhance four skills acquisition. These platforms offer a transformative opportunity for both educators and students, creating an environment that meets the changing needs of today's generation. However, within the context of English language learning, the significance of evaluating the learning journey becomes paramount. It is imperative for both teachers and students to actively assess and monitor their progress throughout the learning process. Hence, this section aims to shed light on diverse measurement technologies that have gained widespread adoption in the domain of second language acquisition. Each of these technological devices offers distinct and valuable opportunities to enrich the learning and teaching experience. The utilization of such technologies ensures a comprehensive and effective approach to language acquisition, aligning with the dynamic requirements of modern education.

8.1. Eye-tracking Devices

By examining the dynamics of language instruction, researchers and L2 practitioners aim to create a meaningful impact on how language learners engage with and assimilate the input provided, ultimately facilitating successful acquisition of the target language. Given that language processing is a complex phenomenon that often occurs outside of learners' conscious awareness, gaining a deeper understanding of how learners interpret the input they receive has proven to be a challenging endeavor. Consequently, the nature of these unconscious processes has largely remained speculative, given the limited insights into the cognitive processes at play. In this context, eye tracking involves the instantaneous recording of an individual's eye movements, usually as they engage with information displayed on a computer screen (Friederici, 2011). Eye movements can provide a window into the knowledge and cognitive processes participants employ to complete a given task or objective. Neurophysiological

research has demonstrated a direct connection between eye movement and brain activity, indicating a relationship between eye movements and shifts in attention (Godfroid, 2019). Recorded on a computer screen in a lab using an eye tracker, the data offer millisecond-accurate insights into participants' viewing behavior during language tasks. Eye movements have enriched SLA research, spanning sentence processing, bilingual lexicon, vocabulary, prediction in language comprehension, language production, assessment, implicit and explicit knowledge, and subtitle processing.

Eye-movement data furnish valuable insights into a participant's gaze location (eye fixation), the duration of fixation, and subsequent saccades. Understanding the fixation location and duration informs researchers about the extent and duration of language learners' engagement with specific information in the input. Eye-tracking devices can be utilized in second-language education to address some issues in the field. For example, according to Leow's model (2015) of the L2 learning process, learners need to attend, detect, or notice linguistic input before the input is stored as intake in the working memory, highlighting the importance of noticing. In this context, whether learners focus their attention on unfamiliar items becomes a crucial concern as learning is unlikely to happen when the input is unattended. Additionally, they can be utilized in vocabulary research by exploring questions like, "Do learners who pay more attention to word forms in meaning-focused tasks experience greater learning gains?" Furthermore, these devices offer deeper insights into assessing grammar knowledge, as students who have internalized a grammar rule will exhibit a response to rule violations that can be measured through their fixations. With the use of eye-tracking devices, these issues in the field of English language acquisition can be effectively addressed.

9. Functional Magnetic Resonance Imaging (fMRI)

The intricate relationship between the human brain and language has long captivated L2 researchers, delving into the complexities of cognition and communication. The brain comprised of billions of neurons, serves as the epicentre of linguistic processing (Ferstl et al., 2008). Language, a unique human ability, arises from complex neural networks that coordinate to comprehend, produce, and interpret the diverse nuances of communication (Kinzler & Spelke, 2007). In recent years, advancements in neuroimaging technology have provided unprecedented insights into the neural underpinnings of language. Functional Magnetic Resonance Imaging (fMRI) stands out as a powerful tool in this endeavor, allowing researchers to observe brain activity in real-time as individuals engage in linguistic tasks. Through the analysis of blood flow changes in different brain regions, fMRI unveils the dynamic interplay

between neural circuits during language processing. As individuals engage in linguistic tasks, various brain regions come to life, each playing a distinct role in the intricate dance of language. Broca's area, nestled in the frontal lobe, is recognized for its role in language production, while Wernicke's area, situated in the temporal lobe, is crucial for language comprehension. The fusiform gyrus, implicated in visual word recognition, and the angular gyrus, associated with semantic processing, further contribute to the rich tapestry of language within the brain (Hill et al., 2019). This symbiotic relationship between the brain and language, illuminated by the non-invasive capabilities of fMRI, allows researchers to explore the neural signatures of language acquisition, multilingualism, and even language disorders (Yang et al., 2015). The integration of neuroscience and linguistics not only deepens our understanding of the fundamental mechanisms underlying language but also holds promise for developing innovative interventions to address language-related challenges. In essence, fMRI serves as the bridge between the abstract intricacies of language and the tangible neural substrates within the brain. As technology continues to advance, unlocking the mysteries of the brain's linguistic symphony becomes not just a scientific endeavor but a voyage into the very essence of human cognition.

Equipped with these advanced tools, tracking language learning progress becomes easier for both learners and teachers. The assessment of learning holds paramount significance in the realm of acquiring a second language, and these technological aids offer a discreet means of evaluating linguistic development. The integration of technology into language education not only simplifies the evaluation process but also furnishes invaluable insights into the intricate dynamics of the learning journey and the ultimate outcomes achieved by the learners. The discreet application of these technological advancements has thus become an indispensable ally in the continuous pursuit of enhancing language acquisition and comprehension.

10. Challenges of Technology in Second Language Education

10.1. Digital Competence of Teachers

The use of technology has a positive impact on the English classroom. Incorporating technology into the instruction of a foreign language entails embracing a constructivist approach where the learner is at the core of the learning process. Consequently, in today's English classroom, ESL/EFL teachers are required to put their digital and media skills into practice. This goes beyond mere technical proficiency; it involves a nuanced understanding of how to incorporate digital resources to enhance language learning experiences. From interactive online activities to incorporating multimedia elements, ESL/EFL teachers are challenged to possess a holistic digital competence (Papanikolaou et al., 2017). This includes not only the

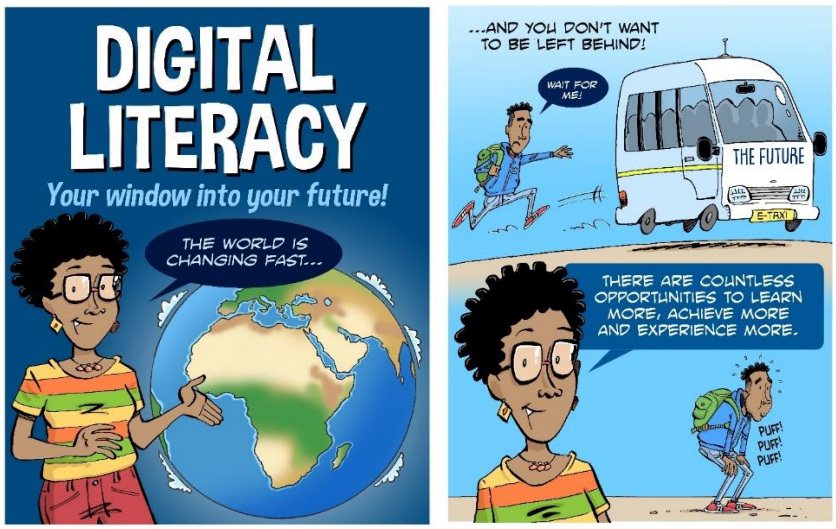
ability to use digital tools but also the skill to use the most effective and pedagogically sound applications. Ruthven's (2007) research points out important aspects for teachers to consider when integrating Technology-Enhanced Learning (TEL) into language teaching. It involves adjusting how they approach their work in terms of the environment, resources, activities, curriculum, and time. This shift goes beyond traditional lesson planning methods. However, there is a disconnect between these requirements and the current state of teachers' digital skills, often focusing on basic computer skills. This basic training falls short of preparing teachers for the more comprehensive digital literacy needed to effectively use technology in language education. To adequately address the requirements of the current generation of learners, teachers must enhance their digital competence. This entails acquiring the skills necessary to integrate technology seamlessly and effectively into the second language classroom. The importance lies in teachers' ability to integrate technology not merely for its own sake but with well-defined goals and educational objectives. Consequently, training for ESL/EFL teachers becomes a critical component in ensuring they are well-equipped to navigate the dynamic intersection of language education and technological advancements. This emphasis on training becomes pivotal in fostering an environment where technology becomes a facilitator rather than a mere accessory, ultimately enhancing the learning experience for second language learners.

10.2. Digital Literacy Skills of Learners

Digital literacy has been defined by various scholars and professionals, each offering interpretations that highlight different nuances. As mentioned by Martin (2005), for instance, "digital literacy is the awareness, attitude, and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process" (pp. 135-136). Therefore, to maximize the use of digital technologies for language learning in digitally connected environments, educators and language learners must acquire digital literacy skills and strategies (Hubbard, 2013). Some language learners lack the digital skills needed to use technology-based language learning tools effectively, limiting the support these tools can offer. In today's fast-paced, tech-driven world, learners must not only become familiar with digital resources but also gain proficiency in using them for second language acquisition. Despite being labeled as 'digital natives,' many of these students are not skilled in using technology for language learning. To address this issue, Hubbard and Siskin (2004) propose the following five principles which are summarized below:

1. Experience CALL yourself. When teachers use their own reflective experiences as language learners using technology, the effectiveness of teaching CALL strategies to students is increased.
2. Provide learners with teacher-like training. For learners to assume responsibility for their learning in CALL activities, it is advantageous to provide them with information comparable to what teachers have, encapsulated in language learning models and principles.
3. Use a cyclical strategy. The best way to learn new skills and information is to take small steps and reinforce what you already know through a spiral or learning cycle. Therefore, it is frequently beneficial to let learners experiment and become acquainted with a new application or environment before providing them with in-depth training.
4. Promote cooperative debriefings. Teachers should assist students in sharing their experiences with new learning technologies because they can learn from each other. The learning process in a classroom setting is improved when teachers provide explanations for their decisions and encourage reflection on the methods they use.
5. Teach general exploitation strategies. It is advisable to train students in general strategies for efficiently utilizing dedicated CALL materials, going beyond the developer's intended uses, in addition to applications and environments. This includes using general information and communication technologies, media, and support technologies (like electronic dictionaries) to further their language goals.

Thus, learner training is crucial because the key factor is how learners engage with and utilize the technology, rather than just the technology itself or its implementation by teachers (Palacios Hidalgo, 2020).



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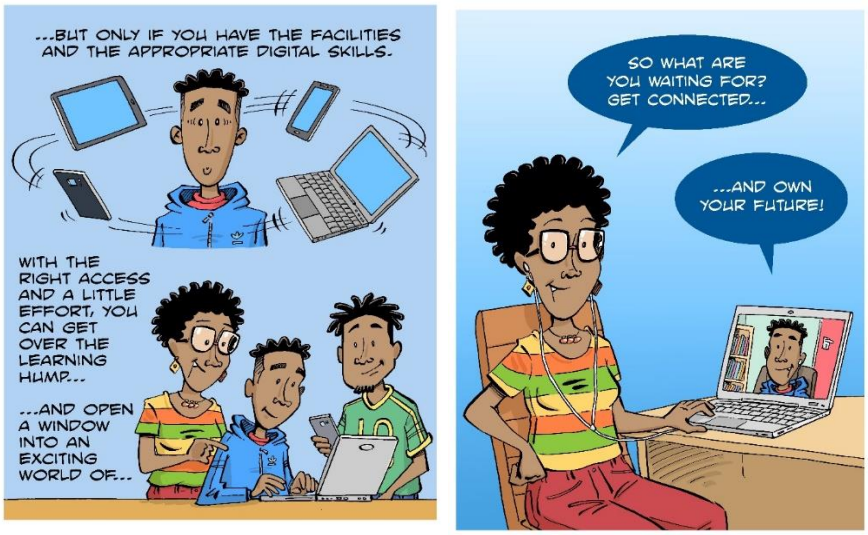

Figure 13. Digital literacy: empowering learners for the future (https://adovh.unisa.ac.za/mod/page/view.php?id=1800.)

10.3. Access to Technology and Socioeconomic Disparities

In addition to the challenges that educators and students face in developing digital literacy and skills, access remains a significant issue when incorporating technology into second language teaching. Even though technology presents opportunities for language learning that are both promising and socioeconomically driven, there are inherent differences in students' access to digital resources. In many educational environments, not all students have the same access to devices, high-speed internet, or other essential technological infrastructure (Kamalov et al., 2023). Since students with limited access may not be able to take advantage of the potential advantages of technology-assisted language learning, the digital divide has the potential to worsen already existing educational disparities. To tackle this challenge, educators should implement inclusive practices and be aware of the various technological tools accessible to their students. Developing strategies that accommodate diverse technological environments and advocating for broader access to technology in educational institutions are necessary steps toward addressing this issue. It is essential to acknowledge how socioeconomic disparities impact students' access to technology and to strive toward creating an inclusive digital learning environment that accommodates their diverse needs.

11. Conclusion

In today's world, technology plays a crucial role in shaping our environment and significantly impacts second language learning and related educational processes. With the rise of the digital age, language—constantly influenced by the society it reflects—undergoes a dramatic transformation. Therefore, the approaches used in language learning and teaching

must be adaptable to meet the demands of the modern world. This chapter's main goal is to highlight the crucial significance of the adaptive process while highlighting the usefulness of digital platforms for second language instruction and acquisition. Technology becomes an essential component of these educational endeavors when considering 21st century imperatives. This chapter emphasizes the importance of evaluating language acquisition in addition to the traditional components of language instruction. It is believed that ongoing assessment is necessary to make sure that learning objectives are regularly tracked and improved. Within this framework, technology plays an important role in the evaluation process by offering new ways to measure language proficiency. Although the incorporation of technology in language education presents certain obstacles, it is crucial to consider this shift as a continuous 'process'. There will undoubtedly be challenges on this transformative journey, but with diligent work and an optimistic outlook, the adjustment to this new era will progress gradually. A clear vision of future directions and a methodical approach to improving teaching and learning become essential for negotiating the challenges of technological integration in language education.

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