Improving listening inferential skills (LIS) through Voscreen: An action research study with SENA learners in Apartadó, Antioquia (Colombia)

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Abstract

This action research project investigated the development of Listening Inferential Skills (LIS) through multimedia-based language learning tools. Specifically, it explored how SENA learners could enhance their LIS using Voscreen, a digital language learning application. Supported in comprehensive listening theories, this study reviewed the contributions of scholars such as John Field, Larry Vandergrift, Michael Rost, and Andrew D. Cohen to establish a research-based framework for fostering LIS development. This study followed a mixed-method research design, which included a pretest, posttest, pedagogical intervention, and a survey to assess learners' perspectives. The results indicated that regular and structured interaction with Voscreen triggered notable improvements in LIS, particularly in understanding the context, identifying emotions, inferring intentions, and justifying conclusions. Additionally, the study revealed how audiovisual input enhances cognitive processes related to inferential listening. However, findings also indicated that some learners struggled with complex inferences, particularly when implicit linguistic and contextual hints were ambiguous. These findings suggest that additional strategies and longer exposure to the application are necessary to maximize the value of digital tools like Voscreen in LIS development. Ultimately, this research contributed to understanding how technology-enhanced listening tools like Voscreen can be better used and emphasized the need for structured guidance when integrating multimedia applications into language learning.

Keywords: Comprehensive Listening Skills, Voscreen, Language Learning, Multimedia Learning Application.

Resumen

Este proyecto de investigación-acción exploró el desarrollo de las Habilidades de Escucha Inferencial (LIS, por sus siglas en inglés) a través de herramientas de aprendizaje de idiomas basadas en medios multimedia. En particular, se analizó cómo los aprendices del SENA podían mejorar sus LIS utilizando Voscreen, una aplicación digital para el aprendizaje de lenguas. Basado en teorías sobre la comprensión auditiva, el estudio revisó los aportes de académicos como John Field, Larry Vandergrift, Michael Rost y Andrew D. Cohen, con el fin de establecer un marco teórico fundamentado para promover el desarrollo de estas habilidades.

El estudio adoptó un diseño metodológico mixto, que incluyó una prueba diagnóstica (pretest), una prueba final (posttest), una intervención pedagógica y una encuesta para conocer la perspectiva de los participantes. Los resultados indicaron que la interacción regular y estructurada con Voscreen generó mejoras notables en las LIS. Además, se evidenció que el uso de insumos audiovisuales potencia los procesos cognitivos relacionados con la escucha inferencial. No obstante, también se encontró que algunos estudiantes tuvieron dificultades con inferencias complejas, sobre todo cuando las pistas lingüísticas y contextuales implícitas eran ambiguas. Estos hallazgos sugieren que se requieren estrategias adicionales y una mayor exposición a la herramienta para aprovechar al máximo el valor de aplicaciones digitales como Voscreen en el desarrollo de las LIS. Finalmente, esta investigación aportó a la comprensión del uso de herramientas tecnológicas para mejorar la escucha y resaltó la necesidad de una guía estructurada al integrar aplicaciones multimedia en el aprendizaje de lenguas.

***Palabras claves*:** Habilidades de Escucha Comprensiva, Voscreen, Aprendizaje de Idiomas, Aplicación Multimedia para el Aprendizaje.

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Introduction

The current educational system is demanding innovative ways to teach English as a foreign language, and along with the great diversity of learners' styles and individual needs, teachers are compelled to go beyond traditional teaching methods and explore new ways to provide more meaningful and interactive learning experiences. In a wide variety of educational contexts, students have shown difficulties in developing important skills like listening, impeding them from having more learning opportunities and moving at a faster pace in the language learning process. One main issue relies on the importance given to the listening skill, as stated by Rost (2024), in comparison with other skills, listening has been paid noticeably less attention by teachers and learners, although it is commonly suggested to be the most difficult skill to learn and consequently to teach. This affirmation is ratified by Dalman & Plonsky (2022) as they explain that listening comprehension instruction has received considerably less attention than other skills and that it has long been neglected and poorly taught in many EFL programs. At this point, it is noted that there is a need to include and improve the teaching of listening, especially the skill of inference-making in listening comprehension, as inferencing is highly related to how effective a listener can become (Gilakjani & Ahmadi, 2011).

According to Cohen (2011), the combination of learning strategies and pedagogical techniques along with multimedia language learning tools play an essential role in the development of listening comprehension, consequently the use of multimedia language learning approaches like Mobile-Assisted Language Learning (MALL) has become a very popular approach as it provides interactivity and input variety that boost students' engagement and motivation, allowing access to authentic resources, encouraging flexibility, convenience and the opportunity to adapt to learners' individual needs, paces and learning styles. Therefore, in this

ever-evolving landscape of language education, the integration of technology has become crucial in shaping innovative and effective learning experiences.

Bearing in mind this matter, this research project is intended to analyze how SENA students could develop LIS through the use of Voscreen, a multimedia language learning application. This work is organized into several sections, providing a roadmap that initially includes the context of the research problem, explaining the rationale behind researching students' inferencing skills, and outlining the main challenges faced by SENA learners in acquiring listening inferential skills. In here, a brief rationale for the use of the application Voscreen is also covered. The theoretical framework that underpins the study explores the literature behind listening inferential skills along with Mobile-Assisted Language Learning. This section also compiles the work and contributions of scholars such as John Field, Larry Vandergrift, Michael Rost, and Andrew D. Cohen to better understand the development of inferential skills. The methodology section explores the methods and approaches intended for the present work, specifying the data collection methods and instruments to be used, such as the pre- and post-test and surveys. Furthermore, the research design section provides an overview of the research approach, population and sampling procedures, ethical considerations, the detailed plan for data collection, and the pedagogical intervention, with its stages of planning, implementation, observation, and analysis.

The findings section of this study explains the impact of Voscreen and indicates how regular and structured interaction with the application triggers notable improvements in LIS, particularly in identifying emotions, inferring intentions, and justifying conclusions. These results suggest that audiovisual input enhances cognitive processes related to inferential listening, reinforcing the potential of multimedia-based learning tools like Voscreen in the

development of LIS. However, the section also further explains how some learners still struggled with complex inferences, particularly when implicit linguistic and contextual hints were ambiguous or contradictory.

Context of the Research Problem

Listening is a fundamental component of language acquisition, but it has remained neglected in English as a Foreign Language (EFL) classrooms. Siegel (2016) explains that EFL programs still rely heavily on outdated models for teaching listening, where the main focus of attention is comprehension checks rather than strategy training or skill development. Similarly, Field (2019) argues that listening is frequently treated as a test rather than a teachable skill, where learners are asked to answer questions after listening to a passage but receive little guidance on listening effectively. Although it is the most used language skill in real-world communication, it has received notably less attention than other overtly assessed skills such as reading, writing, and speaking. However, in the last two decades, research studies have been paying more attention to the central role of listening comprehension in the development of linguistic competence and communicative proficiency in a second or foreign language (L2).

Listening has also been considered one of the most challenging skills for learners to develop (Nurpahmi, 2015), and to listen effectively, listeners must have the ability to apply a variety of strategies to construct meaning, decode the message, and respond to what is said in various ways, depending on the purpose of communication (Wakamoto & Rose, 2021). Considering the difficulty and importance of improving listening skills, it is necessary to rely on digital platforms that help enhance this skill. At present, technological advances have transformed the way listening is taught and practiced. For instance, digital tools, including apps,

podcasts, and video-based platforms, offer a wealth of resources for listening input that can be customized to learners' needs and interests.

Mayer and Fiorella (2021) explain that multimedia input, such as videos with subtitles or interactive transcripts, can significantly enhance listening comprehension as it provides multimodal support for decoding and meaning construction. Listening instruction is therefore a crucial practice that requires all necessary methodological and technological strategies to facilitate learners ' acquisition of listening skills and consequently be able to participate in learning activities (Permata & Susilowati, 2019).

In the context of SENA Complejo Tecnologico Agroindustrial Pecuario y Turistico (CTAPT), learners were not isolated from this issue. They, as most English learners, were struggling to understand spoken English. Some of the problems encountered included limited exposure to authentic spoken language, passive engagement in listening tasks, and difficulties in making inferences while listening.

The limited exposure to authentic materials such as movies, interviews, podcasts, news broadcasts, and everyday conversational audio becomes a real issue in the development of listening skills as these materials allow learners to access realistic language input that resembles the natural speech accent, speed, idiomatic expressions and even the nuances of the language that can only be heard in real-life scenarios. Therefore, without appropriate exposure to these key materials, the development of listening skills is compromised and consequently learners struggle to transfer classroom learning to real-world listening situations. In addition to this, being exposed to a typical listening strategy instruction where learners listen to a text, answer preset questions, check answers among one another, then listen to the text a second time and repeat the cycle, leads learners to feel demotivated and barely engaged in the listening tasks.

This situation brought up the question of how SENA learners were approaching their listening skills and how this could be improved. These learners belonged to the academic program Analysis and Development of Software, which led to a higher concern as their professional profile requires them to communicate with clients through calls or face-to-face assistance. The listening difficulties became apparent during different listening activities in which learners struggled, felt blocked, and were unable to understand simple conversations in English. As mentioned earlier, this issue posed a significant obstacle to their language learning process and required attention to ensure proficiency in the language by the time they had to face the productive stage of their learning process. This productive stage normally takes place in real working scenarios where SENA learners have to conduct certain tasks and, in some cases, assist clients in English.

To better understand the development of listening inferential skills in SENA learners, it was necessary to conduct an action research study that explored how a multimedia language learning tool like Voscreen, framed under a research-based criteria framework and a pedagogical methodology, could help SENA learners develop this skill. The rationale behind this exploration was supported by the work of Ekinci (2017), suggesting that mobile apps are rewarding for foreign language learning and can provide different benefits such as 1) boosting motivation during language learning, 2) making the learning language more effective and 3) providing authentic material that enhances meaningful learning. These assertions are ratified by Eshankulovna (2021), who suggest that these types of apps do provide benefits in listening proficiency and make the learning experience easier, more convenient, more flexible, and more efficient.

Recognizing the importance of improving students' listening inferential abilities, this research project aimed to investigate how SENA learners' comprehensive listening skills, especially listening inferential skills (LIS), could be developed through Voscreen. The reason behind exploring Voscreen relied primarily on its compliance with a meticulous checking process that studied different functionalities necessary to develop inferential skills. Some of these features included the nature and difficulty of activities, the wide range of multimedia resources, and the quality of resources in terms of authenticity, among others. In addition to this, some of its main features include free access to users, accessibility in both web and application versions, and the provision of authentic, real-life video clips from popular movies, TED talks, cartoons, advertisements, and TV programs that offer learners with a user-friendly interface and the opportunity to improve and boost their listening skills in English. Acknowledging the current issue of SENA learners at the time of developing inference-making skills in listening comprehension and the appropriateness of the application in helping users develop inferential listening skills, it was necessary to further explore a research-based pedagogical methodology to enhance LIS.

Research Question and Objectives

Research Question

How can SENA learners' listening inferential skills be developed through Voscreen?

General Objective

To determine how SENA learners' listening inferential skills are developed through Voscreen.

Specific objectives

To establish a research-based criteria framework for evaluating listening inferential skills.

To analyze the pedagogical structure of Voscreen to approach listening inferential skills.

To develop a pedagogical methodology to enhance listening inferential skills on Voscreen.

Rationale for the Study

English language proficiency is crucial for individuals to succeed in a highly demanding and interconnected world. However, many English language learners still face difficulties in understanding spoken language even when they have studied for a long time, which significantly affects their language development, overall proficiency, and therefore better working opportunities. Despite the increasing availability of digital tools for language learning, listening comprehension, especially inferential listening skills (LIS), remains a major challenge for learners, as it involves understanding implicit meanings, emotions, speaker intentions, and contextual hints.

English language learners' listening abilities are of utmost importance to the discipline of language education and the general English teaching community, as it is a vital skill that triggers effective communication and language proficiency. Recognizing the difficulties faced by SENA

learners in comprehending spoken language and responding to inferential tasks, this action research project explored the potential of technology-enhanced approaches, specifically through the use of Voscreen, to improve LIS. The study was designed not only to support students in overcoming their listening challenges but also to provide evidence-based strategies for teachers and innovative contributions to the English teaching community.

The implementation of this research addressed the challenges of listening comprehension, particularly the difficulty of inferring meaning in the spoken language. The pedagogical methodology using Voscreen allowed learners to engage with authentic, interactive, and multimodal listening materials, which facilitated the recognition of emotions, implications, and speaker intentions. The results demonstrated a significant improvement in learners' LIS, as they became more proficient at identifying key inferential elements in spoken English. Furthermore, the structured and repeated use of audiovisual content strengthened cognitive processes related to inferential listening, reinforcing the importance of interactive and technology-enhanced learning approaches.

The problems addressed in this study included limited exposure to authentic spoken language, passive engagement in listening tasks, and difficulties in making inferences while listening. While integrating Voscreen as a multimedia learning tool, SENA learners accessed diverse accents, spontaneous speech, and real-life conversations, thereby increasing their exposure to natural spoken English. The interactive and gamified nature of Voscreen allowed students to actively engage with listening tasks, triggering higher motivation and participation, which contrasted with the lack of engagement observed in traditional listening exercises.

This research made significant contributions to the language learning community. First, it expanded the existing body of knowledge on technology-enhanced language learning, offering

new perspectives into the role of audiovisual tools in LIS development. Second, it provided theory-based strategies for integrating technology into language classrooms, helping teachers adopt innovative pedagogical practices to improve listening comprehension.

The ultimate impact of this research extended to learners, teachers, and the broader English teaching community. Learners benefited from more dynamic and interactive listening experiences, which led to greater confidence and proficiency in inferential listening tasks. Teachers gained valuable information on the pedagogical use of Voscreen, allowing them to design more effective, engaging, and inclusive listening activities. Moreover, the English teaching community gained access to empirical evidence on how digital tools can enhance LIS teaching, promoting a more innovative and technology-enhanced approach to teaching listening comprehension.

In conclusion, this study not only demonstrated the appropriateness of Voscreen in developing inferential listening skills but also highlighted the need for additional technology-based listening

strategies to help learners fully benefit from digital tools.

Literature Review

This chapter aims to address and analyze the most current and relevant literature on the development of comprehensive listening skills, especially those related to making inferences in listening comprehension. It delves into important studies within this field and compiles thematically the theories and foundations on the development of inferential skills and the designing of a criteria framework to approach listening inferential skills (LIS) in the English Language Teaching (ELT) field. In this chapter, a general overview of studies related to listening comprehension is covered, the importance of comprehensive listening skills is analyzed, the role of inference-making skills in language comprehension is further explored along with the most appropriate techniques to teach inference-making skills according to the work or renown linguists, in the same line, some important aspects are discussed to better understand the nature of inferential skills. The use of multimedia-based language learning approaches like Mobile-Assisted Language Learning (MALL) is also studied as a way to understand how it can better help the development of inference-making skills in listening comprehension.

State of the Art

Listening Skills

The skill of listening, also known as auditory skill or listening ability, refers to a person's capacity to process and understand auditory information effectively. In the process of listening, certain actions take place; for instance, it involves the ability to perceive sounds with the ears but also the ability to pay attention, interpret meaning, retain information, and respond appropriately to what is heard.

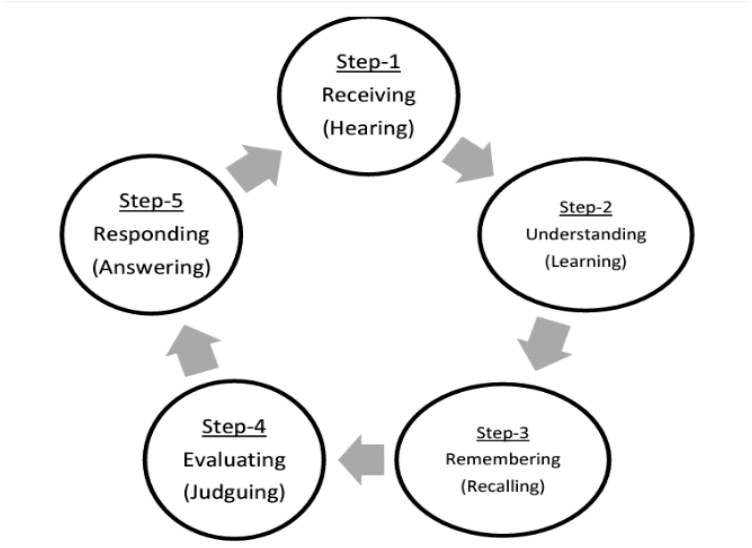
Listening is not a passive process but an active skill that requires cognitive engagement. Recent studies have revealed that integrating authentic materials like films, podcasts, and videos

into listening teaching significantly enhances students' listening proficiency and comprehension skills (Citra, 2018; Polat & Erişti, 2019). Furthermore, research also suggests that listening and reading skills contribute to the development of speaking abilities, with listening playing a particularly significant role in improving accuracy, fluency, and complexity (Gholami et al., 2023). For Vandergrift (2022) listening is the ability to identify and understand what others are saying, and this process involves comprehending a speaker's accent or pronunciation, grammar, vocabulary, and the overall meaning of the message.

Tyagi (2013) proposed that listening occurs in five important stages: hearing, understanding, remembering, evaluating, and responding (see Figure 1).

Figure 1

Tyagi's Listening Cycle



Note. Retrieved from *Listening: An Important Skill and its Various Aspects*. The Criterion An International Journal in English, (p2), by Tyagi, B., 2013.

Hearing refers to the process by which the individual's ears detect sounds through vibrations in the air, functioning as a physiological reaction. However, listening extends beyond hearing as it requires an individual to focus their attention and cognitively process the sounds they receive. Research indicates that using technological platforms such as audio and video-based tools can enhance this cognitive process, promoting better comprehension, pronunciation, and intonation among learners (Castrillejo, 2019; Pal & Patra, 2020).

Understanding, the second stage, occurs when a person makes sense of the auditory input, linking it with prior knowledge and contextual hints. It involves more than just recognizing words as it requires interpreting meaning within specific communicative situations. Studies have demonstrated that exposing learners to real-life spoken language through multimedia platforms helps in developing their inferential listening skills, helping them grasp implied meanings and speaker intentions (Cardenas, 2023).

The process of remembering involves storing information in the brain after it has been processed. When individuals listen, they selectively retain information based on relevance and context. This is crucial for language learners, as studies suggest that multimodal input (audio-visual integration) improves memory retention and facilitates deeper language processing (Vandergrift & Goh, 2022).

In the case of evaluating, it means thinking carefully about what we are hearing, this is something commonly done by active listeners as they look at the information, figure out what is true and what is just someone's opinion, and check if there's any unfairness or bias. Research suggests that learners who engage in critical listening tasks, such as distinguishing facts from opinions and identifying speaker attitudes, develop stronger analytical skills, which are essential for effective communication (Field, 2019). However, it is important not to start evaluating too

soon because if we do, we stop paying attention to what is being said, and then we are not listening anymore.

Finally, the process of responding occurs when we let the person talking to us know that we heard them. This can be done by talking back or using body language like nodding or smiling. It is important because it is how the person talking to us knows if their message got through to us or not, and if the communication was successful. Therefore, including interactive listening exercises, such as digital simulations and role-playing activities, has been shown to enhance learners' responsiveness and engagement in conversational settings (Graham & Santos, 2015).

Comprehensive Listening Skills

Often referred to as listening comprehension, it involves the ability to effectively understand spoken language or audio information. Scholars and experts in the field of language and communication have provided several definitions and perspectives on comprehensive listening skills. For instance, Field (2019) defines comprehensive listening skills as the ability to understand spoken language in real time, emphasizing that it involves grasping both the main ideas and details of what is being said. Vandergrift (2022) describes comprehensive listening as the ability to understand spoken language for various purposes, such as to learn something, to enjoy something, or to help someone, pointing out the importance of listening for different purposes.

Rost (2024) indicates that comprehensive listening can be defined as the ability to understand spoken language in aural texts. He underscores the importance of comprehending spoken language in different contexts, such as educational materials, news broadcasts, or everyday conversations. For Cohen (2011), comprehensive listening is the ability to extract

information and understand the meaning of spoken language. He emphasizes the role of extracting meaning from spoken language, which includes grasping not only words but also the underlying message

Recent studies have further explored and expanded our understanding of comprehensive listening skills. For example, a study by Graham et al. (2015) investigated the role of metacognition in listening comprehension, finding that learners who actively monitored and evaluated their listening strategies demonstrated improved comprehension outcomes. This concurs with the earlier emphasis on the active and purposeful nature of comprehensive listening.

Additionally, research by Pyo & Lee (2024) examined the impact of teaching listening strategies explicitly to language learners. The study concluded that learners who received explicit instruction in listening strategies showed significant improvement in their ability to understand spoken language, supporting the notion that comprehensive listening involves not only passive reception but also active engagement and strategy use.

Furthermore, a study by Vandergrift and Goh (2022) emphasized the importance of integrating listening strategy instruction with regular listening practice. Their research demonstrated that such integration leads to more effective development of comprehensive listening skills, reinforcing the idea that understanding spoken language requires both skill development and strategic awareness.

Based on these definitions and recent studies, comprehensive listening skills can be understood as the ability to effectively understand spoken language or audio information, encompassing both main ideas and details. Scholars emphasize that comprehensive listening serves various purposes and contexts, often involving the extraction of meaning from spoken

language while considering the broader message. As comprehensive listening also implies "extracting the underlying message" (Cohen, 2011), it is closely related to the development of top-down listening skills.

Top-Down Listening Skills

It is a process in which listeners bring their background knowledge and expectations to the listening task, this knowledge helps them predict and make sense of what they are hearing (Field, 2019). The role of prior knowledge and context facilitates listening to comprehension, allowing listeners to anticipate and fill in gaps in the auditory input (Vandergrift, 2022). These skills enable listeners to fill in gaps, infer meaning, and comprehend spoken language more effectively, even when faced with unfamiliar vocabulary or accents.

Recent research has further explored the significance of top-down listening strategies in language acquisition. For instance, a study by Cross (2011) investigated the impact of metacognitive instruction on learners' listening comprehension. The findings revealed that teaching learners to apply top-down strategies, such as predicting content and using contextual clues, significantly enhanced their ability to comprehend spoken texts. Similarly, Ahmadi and Motaghi (2021) examined the relationship between metacognitive listening strategies and listening comprehension, concluding that learners who actively employed top-down strategies demonstrated improved comprehension skills.

In top-down listening, listeners engage in activities such as predicting what might come next in the conversation, using context to figure out ambiguous words, and making inferences based on their general understanding of the topic. These skills are particularly valuable in real-world communication situations, where listeners often encounter variations in language, accents, and speaking styles.

In the context of digital language learning platforms like Voscreen, top-down listening skills are particularly relevant. Voscreen presents learners with short video clips, luring them to predict content, use contextual hints, and make inferences to understand dialogues. This interactive approach concurs with findings from recent studies that excel the effectiveness of multimedia tools in enhancing listening comprehension. For example, a study by Renandya (2012) pointed out that integrating video materials in listening activities allows learners to engage in top-down processing by connecting visual context with auditory input, thereby improving overall comprehension.

Ultimately, top-down listening complements bottom-up listening skills, which involve processing the individual sounds, words, and grammar of a language. Together, these two sets of skills contribute to comprehensive listening, enabling individuals to understand spoken language completely. In the context of Voscreen, top-down skills are exercised when learners predict the content of video clips, use contextual cues to understand dialogues, and make inferences to answer questions. Therefore, learners may enhance their ability to extract meaning from spoken language effectively, thereby improving comprehensive listening skills.

Evaluating how Voscreen helps SENA CTAPT learners in improving their listening skills involved connecting these insights with established language learning theories. Voscreen provided comprehensible input slightly beyond learners' current proficiency levels, concurring with the Input Hypothesis (Patrick, 2019). Additionally, its compatibility with mobile-assisted language learning principles offered flexible and interactive opportunities for skill development (Karakaya & Bozkurt, 2022). Through the combination of visual and auditory elements,

Voscreen stuck to multimedia learning principles, offering an engaging environment that promotes the development of both top-down and bottom-up listening skills.

Listening Inferential Skills (LIS)

Chamot (2008) define inferencing skills as the ability to guess the meaning of new words, predict outcomes, or complete missing parts using the information in a text. Additionally, Vandergrift and Goh (2022) characterize inferencing, among 12 general strategies for listening comprehension and development, with an emphasis on integrating diverse sorts of background knowledge with communicative context or information from a text to guess the meanings of new words or fill in information gaps. They also identify inferencing tactics as abilities to use a variety of resources, such as prior knowledge, visual cues, and the speaker's tone, to compensate for missing or confusing information in a listening text. These two scholars again embrace the significance of inferencing when listed in the six core skills for effective listening comprehension and recommend that teachers take these skills into account when planning listening lessons (Vandergrift & Goh, 2022). Correspondingly, Kim (2016) uses the term inference skills to refer to children’s ability to integrate text information with their background knowledge for the sake of proficient listening comprehension. On the other hand, Newton (2018) considered inferencing as the strategy to utilize prior knowledge to fill in listening gaps, which are commonly used by both competent and less competent L2 listeners.

Chamot (2008) describe inference-making as a problem-solving strategy within metacognitive skills, requiring listeners to rely on previous knowledge to make contextual guesses. Despite being used frequently, the inferencing process is challenging since it demands listeners to take opportunities, make guesses, draw conclusions, and create judgments to effectively interpret listening information at a deeper level.

Recent research has further explored the role of inferencing in listening comprehension. Cross (2011) investigated the impact of metacognitive instruction on learners' listening comprehension, finding that explicit training in top-down strategies, such as predicting content and using contextual clues, significantly enhanced learners' ability to comprehend spoken texts. Ahmadi and Motaghi (2021) examined the relationship between metacognitive listening strategies and listening comprehension among Iranian EFL learners, concluding that learners who actively employed inferencing strategies demonstrated improved comprehension skills, pointing out the importance of inferencing in language acquisition. Karjo et al. (2022) assessed inferential skills in multimedia listening contexts and found that learners' ability to make inferences significantly influenced their comprehension of digital materials, emphasizing the need to develop LIS in technology-mediated learning environments. Tafaghodtari (2010) explored the relationship between inferencing strategies and listening proficiency, revealing that higher-proficiency listeners employed inferencing more effectively, suggesting a correlation between LIS and overall listening competence. Additionally, Pavia (2019) investigated the role of inferencing in incidental vocabulary acquisition through listening, concluding that learners who effectively used inferencing strategies were more successful in acquiring new vocabulary, demonstrating the broader impact of LIS on language development. Therefore, inferencing enables learners to process spoken language beyond the literal meaning of words, helping them make sense of implicit information, adapt to different accents and speech patterns, and compensate for gaps in comprehension.

Inferential Ability In Listening Comprehension

At the time of listening to any kind of audio material or video clip, it is evident that in most cases, the speakers do not provide literal or specific information cues of what is being

intended to say, instead they use gestures, voice intonations, idiomatic expressions, and even the time or place itself to convey a meaning that can only be understood through the ability of inference making. This is the reason why when it comes to deciphering the profound message of an audio or video clip, the linguistic background is not enough; in contrast, listeners require a broader compendium of elements like previous knowledge, often referred to as schemata, social, cultural, and even political knowledge on certain contexts.

Linguists and specialists in the field have defined the concept of inferencing skills in different ways, but they all lead to the same notion of deciphering the intentionally hidden or camouflaged message within the spoken language. For instance, Kendeou et al. (2020) define inferencing skills as the ability to guess the meaning of words, fill in missing parts, or predict outcomes based on one's schemata and context clues. Correspondingly, Kim (2016) uses the term inference skills to refer to children's ability to integrate text information with their background knowledge for the sake of proficient listening comprehension. To sum up, inferencing skills require learners to integrate their prior knowledge and contextual information to make guesses to sufficiently interpret a text. The term inferencing skills are used to refer to the ability to make inferences based on textual clues and one's prior knowledge to clarify ambiguous or confusing information in a listening text, to draw conclusions that are not explicitly stated in the text, to recognize the coherent connections of different parts in the listening speech, to guess the meaning of new words, to fill in missing information and to predict the content of the text.

Although many factors make listening comprehension hard to develop in English Language Learning, for instance, lexical difficulties, limitations in short-term memory, and lack of cognitive and metacognitive strategies, the ability to make inferences carries great importance in this affair. Despite the importance that inference-making conveys in listening comprehension,

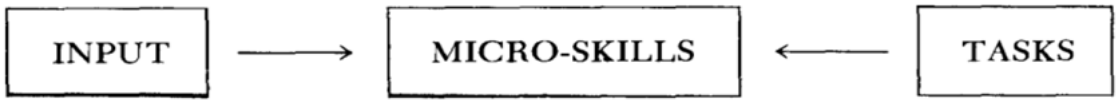
there is still limited research conducted on this issue. There exists a reasonable number of studies concerning inference-making in reading comprehension that can contribute to a better understanding of this affair in listening comprehension. Rost (2024), for instance, suggests that the notion of listening is often considered parallel to reading; both are texts with which readers interact, although the information in written or spoken text is packaged differently.

Teaching Listening Inferencing Skills

The goal of teaching listening comprehension is to provide students with opportunities to acquire particular skills that help them listen better. Among these skills, the ability to infer meaning plays a crucial role in listening comprehension. Therefore, teachers can influence two important elements that are key to enhancing learners' inferencing skills: the input and the tasks. The first element is the input that refers to the language to which learners are exposed, and its features, such as topic, grammatical complexity, and delivery rate, can be adjusted to suit learners' needs. The tasks, on the other hand, are designed to develop inferencing skills and should concur with the learners' proficiency levels and learning objectives.. Figure 1 illustrates the interconnection of these elements.

Figure 2

Input, Tasks, and Micro Skills



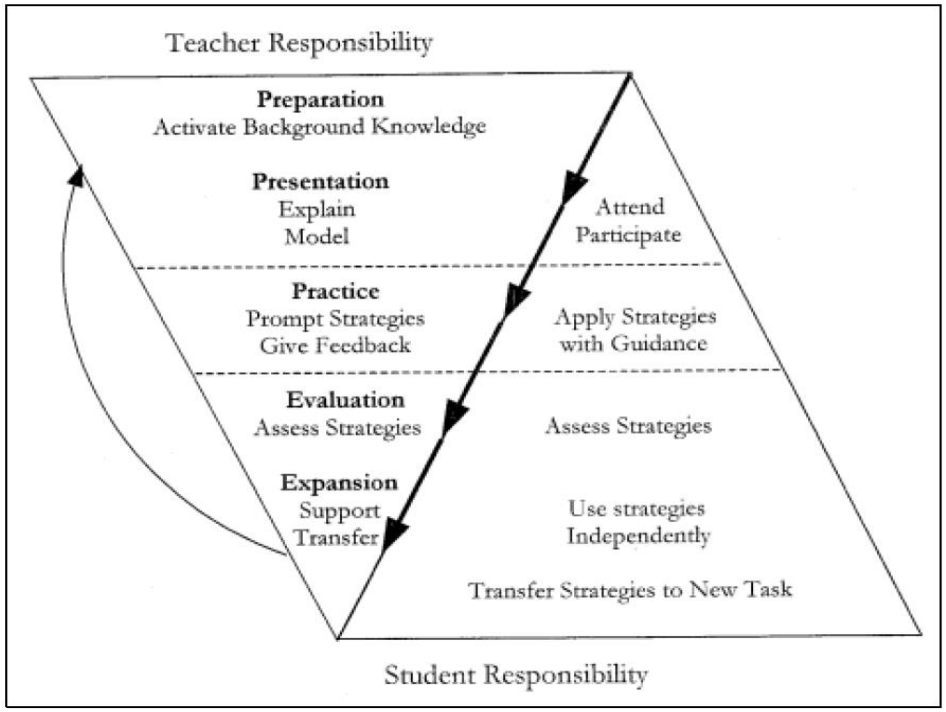
Note. Retrieved from *Listening Comprehension: Approach, Design, Procedure* by Richards, J. 1983

Recent research explains the importance of these elements in teaching listening comprehension. For instance, Vandergrift and Goh (2022) emphasized the role of metacognitive strategies in listening, pointing out how learners can be trained to monitor and evaluate their comprehension processes. Similarly, it is explained the significance of lexical knowledge and prosodic signals, such as stress and intonation, in facilitating listening comprehension. These studies suggest that effective listening teaching should integrate both cognitive and linguistic components to account for the multifaceted nature of listening.

In addition to this, there is more to be considered at the time of approaching inferencing skills. For instance, Chamot (2008) has proposed a framework for strategy instructions that provides a broader overview of other factors also necessary in the development of these skills. As presented in Figure 3, the first thing teachers should do is to activate prior knowledge, then model how to use the strategy, name it, and explain why, how, and when it can be used. After that, teachers provide practice with guidance, evaluation, discussion, and finally independent practice. While students are practicing, teachers should suggest or remind them of the strategy and the purpose of using it to let them identify the correct strategy they need. The use of this strategy then needs to be evaluated by both the teacher and the learners on their own. It is said that learning logs, discussions, and sharing ideas of strategy use are good assessment measures for learning strategies, which also facilitate strategy learning. After all, manipulating listening input and tasks as well as following a systematic approach of strategy instruction is decisive in teaching learning strategies in general and inferencing skills in particular. (See figure 3)

Figure 3

Framework for Strategies Instructions



Note. Retrieved from *Language Learning Strategy Instruction: Current Issues And Research*, (p.), by Chamot, A. 2008.

Recent studies have also expanded on Chamot's framework, underlining the importance of scaffolding and feedback in listening teaching. For example, Graham and Santos (2015) found that explicit strategy instruction, combined with teacher feedback, significantly improved learners' listening performance. Additionally, Siegel (2015) emphasizes the role of collaborative tasks in promoting strategy use, as students' interactions provide opportunities for learners to share and restructure their approaches.

Furthermore, the integration of technology in listening teaching has opened new opportunities for boosting inferencing skills. For instance, research by Cardenas (2023)

illustrates how multimedia resources, such as videos and interactive exercises, can provide authentic listening experiences and scaffold learners in developing inferencing skills. Similarly, Rost (2024) discusses the potential of adaptive learning platforms to tailor listening tasks to individual learners' needs, and in this way optimizing their learning outcomes. Therefore, teaching listening comprehension requires a mixture of approaches that combine controlled input, well-designed tasks, and systematic strategy instruction.

Theoretical Framework

In this section, some of the most closely aligned theories and methodologies concerning the development of learners' comprehensive listening skills mediated by multimedia language learning tools will be explored. By looking into these theories, we can have a better understanding how these tools might enhance listening comprehension skills in SENA learners.

The Input Hypothesis

The comprehensible input suggests that people acquire a second language most effectively when they are exposed to language input that is slightly beyond their current level of proficiency but still comprehensible. Patrick (2019) explains that learners move from “i” (the current level) to “i+1” (the next level), which indeed should be challenging but still comprehensible to trigger the natural language acquisition process in the brain. As for this research study, Voscreen aligns with the input hypothesis by providing several key features. On the one hand, Voscreen provides a diverse database of video clips that encompasses a wide range of topics and difficulty levels. This feature allows for a gradual increase in the level of difficulty during implementation, adapting it to the participants' level of comprehension. This enables them to consistently study content that is slightly above their current level, promoting the enhancement of their listening comprehension skills, and ensuring that learners do not feel overwhelmed or bored with content that is too easy or too challenging. On the other hand, each video on Voscreen can turn captions on or off depending on the user’s level of understanding. These subtitles and transcripts are available in both English and the learners’ native language to allow learners to read along while improving listening comprehension. Even when subtitle activation is always optional for the user, it is particularly useful for breaking down complex sentences into manageable segments.

Montero et al. (2013) & Vandergrift (2022) point out that subtitles and transcripts provide learners with a written representation of spoken language. This visual aid helps in comprehension by allowing learners to see the words and phrases being spoken, making it easier to follow along, especially when encountering unfamiliar vocabulary or accents. Using subtitles and transcripts in language learning aligns with the input hypothesis, as these visual aids help learners understand the spoken language better because they can read along and relate the written words to the auditory input, learners can use the written text to decipher the meaning of unfamiliar words or phrases encountered in the spoken content. Additionally, Voscreen encourages repetition, which is another important aspect of Krashen's theory. While navigating on the platform, users can watch video clips multiple times, allowing them to have a better understanding of the context and situations within the target video clip.

Repetition and review contribute to making input more comprehensible and reinforcing language learning. While the input hypothesis emphasizes the importance of repetition and review, other scholars also recognize their value in language learning, although there may be varying opinions on the extent to which they are essential. Repetition and review are seen as essential for skill consolidation in language learning, which aligns with the principles of skill acquisition and mastery learning, where learners need practice and repetition to attain proficiency. Repetition and review play an important role in developing listening skills (Rost, 2024; Vandergrift, 2022). One of the most remarkable features of Voscreen is that it provides a great variety of video content in which learners are exposed to plenty of accents, speaking speeds, and real-world contexts that further enhance their language comprehension and adaptability. (Patrick, 2019) emphasizes the importance of exposure to a wide variety of language forms and structures in natural contexts, and Voscreen's diverse content types, which

include movie scenes, news clips, interviews, and more, expose learners to different speech patterns, accents, and speaking speeds, mirroring the diversity of real-world language use.

All things considered, the use of Voscreen aligns well with the comprehensible input theory, especially the input hypothesis, as it provides an extensive range of video clips with engaging and challenging topics with varying levels of difficulty that facilitate language acquisition through comprehensible input.

Mobile-Assisted Language Learning (MALL)

Also known as Computer-Assisted Language Learning (CALL), when it specifically involves computers, it is a pedagogical approach that takes advantage of mobile devices and technology to enhance the progress of language learning. This approach combines the benefits of mobile technology with language instruction to provide a flexible, convenient, and interactive learning experience. For some scholars, MALL is defined as "the exploitation of mobile technologies for language learning in formal and informal contexts (Karakaya & Bozkurt, 2022). Pegrum's definition of MALL is broader, encompassing the use of mobile technologies in language learning. He states, "Mobile-assisted language learning (MALL) refers to the processes of language learning facilitated by mobile technologies, such as mobile phones and tablet computers." (Pegrum Mark, 2014).

CALL then involves the use of smartphones, tablets, and other mobile devices to support language learning, including the use of applications, software, and tools designed to facilitate language learning, practice, and skills development. One of the main advantages of MALL relies on its convenience and accessibility, as learners can access language learning resources anytime, anywhere, allowing for greater flexibility in their language schedule. This flexibility is especially valuable for out-of-class work and those learners with busy lifestyles.

Moreover, MALL promotes the use of language learning applications like Voscreen, making language learning engaging and interactive. In this sense, Voscreen can be considered a specific application of MALL as it provides certain key features. On the one hand, Voscreen is based on the use of mobile devices and computers to facilitate language learning. As stated before, MALL & CALL, as broader concepts, encompass all forms of language learning that take advantage of computer and mobile technology, including programs, applications, websites, and platforms like Voscreen. Moreover, Voscreen, like other MALL tools, provides learners with the convenience of accessing language learning resources on their smartphones or tablets, enabling them to engage in language practice whenever and wherever they choose.

MALL platforms typically integrate multiple language skills, including reading, speaking, and writing. In the case of Voscreen, it mainly focuses on helping learners enhance their listening skills. It is important to mention that this is not the only skill that can be developed through this platform, but it is the one under study in the present research.

On the whole, Voscreen is a specific instance of Mobile-Assisted Language Learning (MALL) as it capitalizes on mobile technology to provide language learners with an engaging and flexible platform for improving their comprehension and listening skills while allowing accessibility, interactivity, and multimedia elements that enhance the language learning experience.

The rapid evolution of digital technology in the contemporary world has led to significant transformations in language education. Mobile phones, often described as “pocket-size worlds,” have emerged as versatile tools for foreign language learners (Ekinci, 2017) and have also played a significant role in English learning, offering a wide range of benefits to learners of all levels and especially to those who have certain skills difficulties like listening comprehension. The use

of mobile devices and applications offers a potential solution to learning difficulties as they provide flexible and efficient tools for collaboration, coordination, and communication (Eshankulovna, 2021).

As a result, it is clear that mobile-assisted language learning (MALL) stands out for its ability to offer individualized, learner-centered, and collaborative learning, capitalizing on the mobility and ubiquity of these devices (Shortt et al., 2021). Yet, despite the potential of mobile technology in language education, there remains a lack of knowledge on how these technological tools can be best utilized.

With the advances of technology, we have seen the rise of applications in foreign language education. Voscreen, for example, is an application available in both web and mobile versions that is used in foreign language education. The emergence of Voscreen has been perceived as promising thanks to its features and the way the listening comprehension exercises are approached. Moreover, its innovative design offers learners a self-directed interface for improving language abilities (Taylan, 2018). Indeed, Voscreen excels because of its user-friendly interface and authentic materials (Ekinci, 2017).

Benefits of Voscreen

Merzifonluoglu (2023) describes Voscreen as an innovative and interactive language platform that helps learners enhance their listening skills and highlights some of its most relevant characteristics as follows.

1. It provides an interactive platform that engages learners in dynamic listening exercises, fostering an immersive language learning experience.
2. It offers a diverse range of real-life videos, ensuring learners encounter authentic accents, diverse vocabulary, and varied speaking speeds.

3. Its system tailors exercises to individual proficiency levels, providing personalized challenges and opportunities for skill progression.

4. With an intuitive design, it allows learners to filter the target content, structure, and level, promoting accessibility and ease of use.

5. It incorporates gamified features, such as scoring systems and countdown timers, and Voscreen enhances motivation and engagement during language practice.

6. Voscreen incorporates short video clips from movies, TV shows, and everyday conversations, offering diverse linguistic contexts.

7. Learners answer comprehension questions in a two-choice format, enhancing their ability to decipher spoken language nuances.

8. The application includes observation groups, allowing for keeping track of learners' interactions.

9. Users can create personalized playlists based on their learning experience by selecting content aligned with their interests and linguistic goals.

Based on these features, Voscreen was awarded third place out of 500 global initiatives under the category of the "best education application" in a competition organized by the world-renowned Wharton Business School and had surpassed the huge number of 1.7 million users worldwide by 2016. (Taylan, 2018).

Yilgin (2023) explored the potential of Voscreen to improve language learning outcomes and emphasized the importance of integrating technology into language teaching. The main results upon completion of this work resulted in contributions on how Voscreen can be best utilized to enhance listening abilities. Initially, it was concluded that using technology, like the Voscreen application, has been proven to help students learn languages better. Voscreen

specifically has been shown to improve vocabulary and understanding while listening. When students learn with technology, it usually makes them feel positive and can make them want to learn more on their own. This can lead to better results and motivate learners. According to Alhawad (2020), using the Voscreen application can also help students speak better in English and become good at the language. Although Voscreen can be a useful tool for English teachers to teach vocabulary and listening skills in their lessons, to be effective, teachers need to be trained and skilled in using it in their teaching. It's important to make some changes and updates to certain features that can help teachers be more successful in their classes. In general, using Voscreen in language teaching can make learning more enjoyable for students because it is like a game, and it motivates them to learn. Ekinci (2017) conducted the study in search of understanding the perceptions of students towards the use of Voscreen as an aid for listening comprehension. Some of the main conclusions obtained in this study revealed that students had high perceptions and ideas about the use of the application as supportive material for their language development, especially that of listening comprehension. The general conclusions aligned with the ideas of Febiyanti et.al (2021), that audiovisual materials such as authentic videos create the opportunity to get live education and make the learners adapt to native accents. While mobile applications like Voscreen are gaining traction, challenges persist in traditional language education settings. The use of technology like Voscreen aligns with the contemporary shift towards learner-centered, interactive education (Natarajan et al., 2022).

Multimedia Learning Theory

According to Mayer (2020), the word "multimedia" can mean different things to different people. It might make you think of being in a room where you see images on screens and hear music or sounds from speakers, like a live performance. Or you might picture sitting in front of a

computer screen where you see pictures and hear someone talking through the computer's speakers, like an online lesson. Another example could be watching a video on a TV while hearing the words, music, and sounds that go with it, or looking at a PowerPoint presentation while someone talks about it. In simple terms, multimedia is when you see and hear different things together. In language learning, the multimedia learning theory, developed by Mayer (2020), is a cognitive theory that focuses on how people learn from multimedia presentations, which typically include a combination of visual and auditory elements. This theory takes into consideration some characteristics like dual coding, which suggests that people process and store information in two separate but interconnected channels: one for visual information and one for auditory information. Mayer argues that learning is more effective when both channels are activated simultaneously. For example, when learning from a multimedia presentation, individuals process information both through visual images and the spoken words.

Voscreen, for instance, employs both visual and auditory elements in its video-based multimedia content. It means that users can watch video clips that include spoken language (auditory) along with relevant animations and occasional graphics (visual). This dual coding enhances learners' ability to process and retain information as they engage both the visual and the auditory channels simultaneously. Additionally, one of the main principles of the theory is the modality principle, which states that information is better understood and retained when presented in the form of narration (spoken words) instead of on-screen text in multimedia presentations. Mayer's research suggests that the auditory channel should be used for explanations and descriptions, while the visual channel should be reserved for graphics, animations, or diagrams.

Voscreen, for instance, adheres to the modality principle by primarily using the auditory channel (spoken words), rather than relying heavily on on-screen text, but instead, also using the visual channel through animations and movie clips. Learners listen to native speakers and practice their listening comprehension skills, aligning with Mayer's recommendation to leverage the auditory channel for explanation and description. On the other hand, Mayer's theory also highlights the spatial contiguity principle, which suggests that related visual and verbal elements should be presented close to each other in space. This arrangement helps learners connect the information presented visually with the corresponding auditory narration, reducing cognitive load and enhancing comprehension.

Voscreen, for instance, integrates visual and auditory elements spatially on the same screen, while learners watch a video clip, they also hear the spoken language and have the additional option to read subtitles simultaneously according to their choice and level of understanding. This spatial contiguity between the video clips, the spoken words, and the subtitles helps connect the auditory and visual information, promoting a better understanding. Mayer also recommends dividing complex multimedia presentations into manageable segments or chunks. This segmentation helps to organize and process the information, so learners can focus on one segment, structure, or topic at a time, allowing for more effective cognitive processing.

Voscreen for instance, segments its content into manageable video clips which are typically short (5-20 seconds), focusing on specific language structures, concepts, vocabulary, or conversational scenarios. This segmentation helps to organize and process the information, making it easier for learners to concentrate on one topic at a time and therefore facilitating their

learning process. Considering the previous characteristics, it can be said that Voscreen aligns with the principles of the multimedia learning theory in the following ways.

Methodological Framework

The present chapter explains the research method and approach used in this study. It provides a complete description of the research design, steps, methods of data collection, the sample, and the techniques to be used for the data analysis. This chapter also includes a theoretical background to support the selection of action research to comply with the objectives of this research. Finally, through a mixed research approach, this action research aims to gather and analyze qualitative and quantitative data to give answers to the objectives.

Methodological Design

Research Approach

Based on the research objectives and the nature of the problem under study, this research incorporates both quantitative and qualitative methods to get a holistic understanding of the pedagogical approach (Flick 2022). Considering that this project aims to understand how SENA learners can better develop inferential listening skills (LIS) through the Voscreen application. The quantitative approach will be implemented by conducting a pre-test and a post-test to measure the learners' inferential listening skills level before and after conducting the proposed pedagogical approach for developing LIS. According to Soderstrom & Bjork (2023), these tests are valuable for assessing learning progress, as they provide a measure of change over time. These tests will also offer quantitative data that are amenable to statistical analysis, facilitating a systematic assessment of the pedagogical approach outcomes, adding validity to the research by providing a quantitative measure of the intervention's impact and helping to identify areas where students have improved and areas where further attention and adjustment may be required (Watson, 2015). The structure of these tests included open questions that provided answers to the six research-based criteria for assessing LIS. These questions are: 1) where and when do you

think the scene is taking place?, 2) How do you think the character(s) in the scene feels?, 3) what do you think the character(s) want to achieve in the scene?, 4) what do you think are the possible consequences of the character(s)' decision?, 5) why do you think the character(s) did, are doing, or will do that?, and what part of the video leads you to that conclusion? These questions resulted from the main six research-based criteria framework to assess the development of listening inferential skills. These criteria are stated as follows: 1) understanding the context, 2) identification of emotions, 3) inference of emotions, 4) recognition of implications, 5) justification of inferences, and 6) originality.

On the other hand, a survey was conducted to collect qualitative data on learners' perceptions, attitudes, and experiences in the participation in the pedagogical approach to develop inferential skills. This survey provided feedback on specific aspects of the application, such as usability, accessibility, and content quality.

Research Method

This study is framed under action research, which is underpinned by a distinct research philosophy deeply rooted in pragmatism; a philosophical approach that emphasizes practicality, experience, and the application of knowledge to solve real-world problems (Coghlan, 2022). This philosophy covers several fundamental principles that guide the methodology and approach of action research. One important feature of action research is that it is participatory; therefore, it requires not only researchers but all stakeholders to work with and for the research objectives. In this action research, SENA learners were not only part of the implementation stage, but they also had the chance to propose new procedures resulting from their personal experiences in using Voscreen as a tool to help them improve their inferential listening skills.

Several prominent authors have contributed to the understanding of action research, each emphasizing its participatory and problem-solving nature. For instance, De Olivera (2023) explains that action research aims at starting understanding and improving teaching practices. This dynamic research approach is characterized by its adaptability and context-specific nature, making it a valuable method for addressing real-world problems and promoting positive change. On the other hand, Cornish et al (2023) highlighted the cyclical and participatory nature of action research, where they described it as a method for improving practice through systematic inquiry and reflection. This cyclical process involves planning an intervention, taking action, observing the outcomes, and reflecting on the results, which informs further action. The common thread among these authors is the systematic and iterative nature of action research, which involves active participation, collaboration, and a commitment to bringing about positive change. In this project, action research aims at enhancing LIS of SENA learners using Voscreen, a multimedia language learning application. This action research can provide a practical and participatory framework for systematically assessing the impact of the pedagogical approach and making data-driven improvements.

Context of the Research

Population and Sampling Procedures

This action research involved 15 SENA learners who belonged to the Analysis and Development of Software program in Apartadó, Colombia. Among the 15 participants, there are 9 males and 6 females whose ages were between 18 and 35 years old. They all complied with the defined basic requirements and were eligible to participate in this research project. These requirements, among others, included belonging to a SENA licensed program, have been coursing the English module, and being willing to participate in the project.

This action research used a purposive sampling approach, which is a non-random sampling method where researchers choose specific participants who meet certain criteria or possess characteristics relevant to the research objectives. Purposive sampling aligns with the research problem and objectives as it allows to choose the participants who are directly relevant and willing to participate in the study. This group of SENA learners, in particular, was facing challenges in improving their listening inferential skills (LIS).

Ethical Protocol

As this research study aimed at exploring an educative practice in the second language field that involved human subjects and the collection of data, it was necessary to guarantee safety measures while conducting this process. In this research study, for instance, the level of risk and inconvenience for possible participants was low and minimal, and therefore it did not entail any significant risk to their general welfare nor imply discomfort, other than spending time in the implementation and collecting phases of the research. In contrast, by participating in the development of the pedagogical approach for LIS, participants benefited, for instance, in language production practice (Mackey & Gass, 2015). Despite all of this, the research project took all necessary measures to guarantee that any arising risk was minimized or deleted, and participants were thoroughly protected.

First of all, it was crucial to secure permission from the SENA institution to conduct this study. This formal permission consisted of a letter that was emailed to the regional subdirector of the center and the coordinators in charge. It explained in detail the intention and nature of the research study, the possible program and number of participants, the duration, how the data was going to be collected, the risks and benefits, and further inquiries that could arise from

participants. This formal request was the first step to guarantee compliance with the institutional policies and guidelines.

After permission was granted, target participants were contacted through the instructor in charge. The researcher provided all information in detail about the process and provide an informed consent form (see appendix A) where they received clear and comprehensible information about the study's title, purpose, researcher's information, the benefits of participating, the possible risk and how they were going to be approached, the general plan, length of study, confidentiality, data security and their general rights before, during and after completion of the study.

Regarding how risks were going to be approached, the researcher adopted some protective measures that included the use of well-conditioned learning environments in terms of illumination, ventilation, seating comfort, and evacuation routes identification. As for confidentiality and data security, the research responsible made every effort to keep the collected information anonymous and safeguarded throughout all phases of the project. To do this, all the information was stored in the researcher's computer and encrypted in a cloud storage, and by any means, it was not part of an external network, other than the institutional one, and was only accessed by the researcher or authorized personnel from the university. Additionally, participants' names and real information were not used or published. Whenever data from this study was published, fictitious names were used.

Concerning the rights of participants, they were notified from the very beginning that participation in this study was entirely voluntary; they also had the right to leave at any time and by any means, leaving the study would not result in any penalty or affect their academic or

general performance in their English course. If they decided to leave, they could inform the instructor or researcher. They would still participate in the proposed activities, but nothing they said or did would be used as part of the data analysis of the project.

It was also clarified that the researcher could stop the study or take them out of the study at any time, whether they were not strictly following the instructions, they were no longer appropriate for the nature of the study, or for any reason that could affect the implementation of the study. Understanding how serious confidentiality is and the critical ethical considerations it conveys in research, especially when dealing with participants' sensitive information, this research study conducted certain measures to keep the participants' information and identities protected (Resnik, 2020) as a way to not incur any kind of violation of research ethics like sharing information that may lead to participants' identification.

Therefore, this research study ensured the privacy and anonymity of participants' information by firstly using secure channels of communication like official email domains, especially when requesting permission and receiving any kind of query from participants. During the collection, analysis, or publication of data, the use of real names or personal information was avoided; instead, pseudonyms, fictitious names, code names, or numbers were used. All the information gathered was safeguarded and password-protected, and encrypted on a cloud storage, and its usage was limited and highly restricted to authorized personnel.

This research study was shortlisted to a unique author who was responsible for conducting all phases of the research study and testified that the study under research was original, valid, and had not been published anywhere else (Drolet et al., 2023). Therefore, there were not any kind of authorship issues. It is important to mention, though, that those who

revised, advised, and assisted in the collection of data, implementation, and analysis were acknowledged and notified with ample anticipation.

To manage and analyze data without causing any kind of harm or discomfort to the people involved, and address the three aforementioned issues for data management, the research responsible :

1. Was the only one in charge of the data. This means that he was the only one responsible for collecting, analyzing, and processing the data in all phases of the study.
2. Stored data electronically in official, encrypted cloud servers like Google Drive.
3. Ensured that no data was excluded from the final results and the interpretation of results was accurate.
4. Ensured the data was kept protected and safeguarded as long as the university policies determined.

Data Collection Techniques

This research study obtained the data through the application of a pretest, an intervention proposal, a posttest, a checklist, and a final perception survey. As soon as the data from all stages was available, all the information was revised, organized, categorized, and coded in an Excel sheet for the data analysis process.

Description and Rationale of the Instruments

This research study employed different instruments for data collection, such as a pretest, questionnaires, a posttest, a checklist, and a survey. Each one served a specific purpose and intention that is further explored as follows.

The pretest

The pretest (See appendix) was conducted at the beginning of the pedagogical approach implementation, right after having socialized the project with the participants and after having explained the usage and interface of the application. Here, students had to watch 10 video clips twice and then answer 5 follow-up open questions according to what they understood. These questions particularly resulted from the nature of LIS evaluation and were aligned with the research-based criteria framework for evaluating LIS. The rationale behind implementing a pretest within this proposal relies on the importance of this instrument as a critical component in educational research, as it provides a baseline for understanding the entry level or initial background of participants concerning listening inferential skills (LIS). According to Crewell (2014), a pretest allows researchers to determine the starting point of participants and assess the extent of change after the intervention. In the context of this research proposal, where the focus was on developing inferential listening skills through the use of video clips, the pretest served multiple essential purposes. First, the pretest helped identify the initial proficiency levels of students in inferential listening. As noted by Mertens (2015), understanding participants' baseline abilities is crucial to designing more accurate interventions that address the target purposes. In the exercise of categorizing participants into performance levels (see Appendix), such as "very low," "low," or "satisfactory," the pretest data guided the implementation of the intervention and provided a foundation for comparative analysis. Secondly, the pretest facilitated the evaluation of the pedagogical approach. Here, when comparing the pretest and posttest scores, it was possible to measure the extent to which the participants enhanced their listening skills due to the pedagogical approach.

Questionaries

Questionnaires were used during the implementation of the pedagogical approach; here, participants wrote down answers on a questionnaire sheet to better understand their progress in developing listening inferential skills. These answers were related to the same 5 target questions for developing LIS. The use of questionnaires as a data collection instrument was integral to this research proposal as they provided structured and focused answers from participants during the intervention. According to Burns and Grove (2010), questionnaires are effective tools for systematically gathering data, especially when the research aims to evaluate specific aspects of an intervention. Also, in this study, the five target questions were designed to evaluate key elements of inferential listening comprehension after exposure to each video clip. These questions allowed the participants to reflect on and demonstrate their ability to extract meaning, identify underlying themes, and make inferences. As Dörnyei and Taguchi (2010) emphasize, questionnaires are particularly useful in educational research for capturing subjective experiences and cognitive processes that are not easily observable. Moreover, the standardized nature of the questionnaires ensured consistency in data collection across all participants and sessions, enhancing the reliability of the results (Cohen et al., 2018). The responses provided quantitative and qualitative data that were critical for measuring individual progress, identifying patterns, and comparing outcomes across different sessions.

The Posttest

The post-test was conducted at the last stage of the implementation of the pedagogical approach as a way to assess the learners' exit level regarding their inferential listening skills. This diagnostic test had the same characteristics as the pretest, but this time, different video clips were used. Participants still had to watch 10 video clips twice and then answer follow-up questions according to what they understood. Conducting the post-test was essential in this research

proposal to evaluate the progress of participants in the development of LIS. Posttest are critical in research as they measure the outcomes after the application of a treatment, providing a basis for assessing the intervention's impact. In this study, the posttest served as a means to compare participants' performance against their pretest results, allowing for an analysis of learning gains. This comparison enabled the identification of specific improvements in inferential skills, such as identifying themes, making connections, and understanding implicit meanings in the video clips. As explained by Fraenkel and Wallen (2012), posttests are particularly valuable for determining the extent to which educational interventions achieve their objectives.

The Checklist

Lastly, the checklist aimed at evaluating the pedagogical structure and appropriateness of the application Voscreen in enhancing LIS (see appendix) was conducted before starting the pedagogical approach. It specifically evaluated whether the platform designed activities progressively increased the level of difficulty in auditory inference, if users could select activities within their target English level and individual needs, if there were different levels of listening inferential skills video clips, if the content was varied, of high quality and represented real-life situations and use natural language, if this content provided opportunities to improve LIS, among other pedagogical aspects. This was a critical component of this research proposal, as it ensured the pedagogical soundness and appropriateness of the Voscreen application in enhancing listening inferential skills (LIS). According to Brown (2001), a checklist is an effective tool for systematically evaluating instructional materials and platforms to confirm their alignment with educational objectives and learner needs.

Survey

This instrument was designed to collect data on SENA learners' perceptions, attitudes, and experiences after completion of the pedagogical approach implementation. It was administered using a paper-based, Likert Scale format (See Appendix). The rationale behind implementing a survey paper-based format relies on the fact of preventing any technical issues at the time of taking the survey and allowing participants to take some time to write and reflect upon their answers and provide further feedback. The Likert Scale format (Scale 1 to 5), on the other hand, was necessary to provide participants with an ample spectrum of answers and have a more comprehensible understanding of participants regarding their participation in the pedagogical approach and the appropriateness of the application in helping to develop listening inferential skills (LIS). The structure and nature of questions, among others, were oriented to assess learners' perceptions in terms of usability, user interface, content originality, and pertinence in helping develop LIS. The rationale of the survey relies on the importance of providing participants with the opportunity to reflect and comment on their personal experiences through the process, getting their insights and perspective, and this way, providing the study with additional support.

Validation Procedures

Considering the importance of the instruments' reliability and validity in collecting participants' data in the development of inferential skills before, during, and after the implementation of the project, it was necessary to make sure that the instruments were aligned with the objectives and served as a reliable and valid source of information. For the chosen instruments, a checklist was initially used to make sure that they complied with specific criteria regarding the purpose of the project. Some criteria, for example, included the convenience and pertinence of the type of questions and exercises to be implemented in the project. As a way to

reinforce the pertinence and validity of the test, a pilot test was conducted with a small group to resemble the real scenario and be able to evaluate in detail the structure, findings and areas of improvement. An extended validation was also conducted through the advisory from an expert in the field; in this particular case, this expert provided an expanded overview of the instruments, suggesting adjustments to account for their reliability. This validation process was divided into four different stages. The first stage consisted of designing the instrument based on the project objectives. Eventually, in the second stage, there were revisions based on the checklist and the expert in the field. Later on, in the third stage, the instruments were implemented to be finally analyzed and corrected in the fourth stage.

Pedagogical Methodology to Develop Listening Inferential Skills (LIS)

The pedagogical approach in this research project was designed as a structured sequence of sessions aimed at enhancing participants' listening inferential skills (LIS). This approach was grounded in the findings from the literature review, the intervention integrated principles of Mobile Assisted Language Learning (MALL) and Multimedia Language Learning (MLL), considering the integration of technological devices along with authentic audiovisual material to promote active engagement and real-world applicability of listening skills (Hashim et al., 2023). This pedagogical approach included a pretest, eight sessions with pre-, during-, and post-listening drills, and a posttest, all designed to target LIS development.

Each session was built around the use of ten video clips, selected to represent diverse and authentic real-life contexts where participants engaged with these clips through a pre-listening phase, which activated prior knowledge and set the context for understanding; a during-listening phase, which involved focused tasks requiring inference-making; and a post-listening phase, where participants reflected on and analyzed the content considering Field's model for effective

listening instruction, which emphasizes scaffolding learners' engagement with listening tasks. To have a broader understanding of the approach, participants answered five open-ended (see Table 1) target questions after watching each video. These questions were designed to stimulate critical thinking, elicit inferences, and promote analytical reasoning, consistent with Goh's (2002) recommendation for fostering metacognitive strategies in listening.

Table 1

T1 - Questions for evaluating LIS

Question	Description
Question 1	Where and when do you think the scene is taking place?
Question 2	How do you think the character(s) in the scene feel?
Question 3	What do you think the character(s) want to achieve in the scene?
Question 4	What do you think are the possible consequences of the character(s)' decision?
Question 5	Why do you think the character(s) did, are doing, or will do that? What part of the video leads you to that conclusion?

Development of Application

The pedagogical approach was conducted by taking into account a work plan (see table 2) and the following stages. In the first session, moment 1, the researcher introduced participants to the application, explaining in detail how to register, navigate through all the options, create, and add favorite video clip playlists. Eventually, at moment 2, participants took the pretest to determine their entry level concerning their listening inferential skills. In sessions 2 to 9, participants interacted with the application and 10 meticulously-chosen video clips, where participants had to develop pre, during, and post-listening drills to eventually provide inference-

made answers to the 5 target questions aligned with the research-based criteria framework for evaluating LIS. In session 10, participants took the posttest to determine their exit level and contrast the results upon completion of the proposal.

Table 2

T2 - Work plan for the intervention

Session 1 Moment 1	Session 1 Moment 2	Session 2-9	Session 10
Getting acquainted with Voscreen	Taking the pretest	Developing the proposal	Taking the posttest

Note. Sessions took place every week.

Bearing in mind that the proposed model for the project was classroom action research (CAR), the four stages for the implementation of the proposal were conducted as follows:

Planning and Preparation

In the first stage, participants were invited to an introductory session to familiarize themselves with the application. In this particular session, participants got all the information related to Voscreen. This instruction included the account setup, where participants made sure to create user accounts and ensure they had access to all features and functionalities. Eventually, the researcher provided indications on how to :

a) Choose a practice level based on grammar structure, rhythm, and other varied content.

b) Enter a Voscreen observation group.

c) Create a playlist and add video clips to it.

d) Check scores and global ranking.

e) Understand the scoring system and countdown answer timer.

f) Answer the target video clips.

After completion of the introductory and user setup stage, participants took a validated pre-test to get an entry-level and set a starting point in the implementation.

Implementing

In this second stage, the researcher shared the projected timetable with participants, they got the information about the sessions and playlists to develop during each session. The research implementation started with getting participants acquainted with the platform and then taking the pretest. Later on, participants developed the target video clips and provided answers to the proposed questions and finally participants took the posttest.

Observing

In the observing phase of the project, the researcher played an active and supportive role by closely monitoring participants' engagement with the activities and providing guidance whenever necessary. During each session, the researcher observed participants' interactions with the tasks, particularly their ability to navigate the Voscreen platform and complete the pre-, during-, and post-listening drills. This ensured that participants fully understood the instructions and objectives of the exercises. The researcher's presence was crucial for identifying and helping with any issues that arose, such as technical difficulties with the platform, challenges in understanding the tasks, or struggles with the listening activities. Helping participants with timely interventions and clarifications helped keep a smooth progression through the sessions and minimized disruptions in the development of the proposal.

Analyzing and Reflecting

In this fourth stage, all the data collected from the pretest, posttest, and questionnaires, along with sessions, were processed, decoded, and analyzed by using the evaluation matrix. To do this, a comparative analysis between the two tests was conducted to determine if there were statistically significant changes in listening inferential skills (LIS).

Data Analysis and Findings

Introduction to Data Analysis

The information explored in this chapter is related to the analysis of the data and the corresponding findings of the research. Consequently, this section covers important aspects of the study that allowed the researcher to better understand the results and findings after completion of the pedagogical approach. This study implemented a descriptive, comparative, and individualized progress analysis to comprehend the results obtained. The descriptive model, for instance, was fundamental to summarize and organize the collected data to further explore the frequencies and percentages of participants based on their performance categories (very low, low, satisfactory, high or excellent). Also, it helped provide the average scores of participants as well as indicating general tendencies, especially those evident between the pre- and post-test. The comparative analysis, on the other hand, was also used to better understand and assess the progress evidenced between the two diagnostic tests, allowing a better overview of group and individual scores as well as significant changes among performance categories. The individualized progress analysis was also a key process as it allowed to have a more detailed follow-up of each student in the different sessions.

Data Management Procedures

According to García and Cuervo (2018), descriptive analysis is used to describe the basic characteristics of a study, providing a general overview that allows the researchers to identify patterns, tendencies, and distributions. On the other hand, Lopez et al. (2019) recognized descriptive analysis as one of the best methods to present data in a very precise and organized manner, using graphics, charts, and measures of central tendency such as the mean, median, and mode. For Ghanad (2023), descriptive analysis is also a fundamental tool to establish an initial

panorama and eventually contextualize the obtained results and provide a baseline for further analysis. This research project implemented the descriptive analysis at the time of classifying participants according to their entry level; here particularly a pretest was conducted to get this information. Each participant was classified according to some predetermined categories (very low, low, satisfactory, high, excellent). This allowed for identifying how the group of participants was distributed in terms of performance from the beginning to the end of the pedagogical approach implementation. In the same way, this method allowed for identifying patterns of group performance and assessed the general impact of the video clips on the inferential skills. The comparative analysis, on the other hand, helped contrast data from different stages and moments of the implementation. According to Hernandez et al. (2014), this type of analysis is key to evaluating the effectiveness of any implementation. Martens (2015) indicates that this analysis is particularly useful as it allowed the evaluation of the impact of pedagogical strategies through the comparison of results before and after the intervention. Therefore, in this study, this method was necessary to analyze the differences evidenced in individual and group scores to measure the general impact of video clips concerning the development of inferential skills. Also, it helped identify the changes within categories and scores among sessions, which consequently enabled to better understanding of the results.

First, the answers to the pretest were scored taking into consideration the criteria framework for evaluating listening inferential skills, (see table 3) and the scale of descriptors (see table 4).

Table 3

T3 - Listening Inferential Skills (LIS) Criteria Framework

Criterion	Description
Understanding the context	The student demonstrates an understanding of the general context of the communicative situation by identifying the place, time, and relationship between the speakers.
Identification of emotions	The student recognizes and interprets the emotions of the speakers based on tone of voice, words, and context.
Inference of intentions	The student deduces the motives, objectives, or intentions of the speakers from their words and actions.
Recognition of implications	The student understands the consequences or implications of what is said, both on a superficial and deeper level.
Justification of inferences	The student supports their inferences with evidence from the video clip, explaining how they arrived at that conclusion.
Originality	The student provides original and non-obvious responses, demonstrating critical thinking.

At this point, each of the answers provided for participants was given a score from 1 to 5 based on their compliance with the criteria of the descriptors.

Table 4

T4 - Scale of Descriptors

Understanding The Context	Descriptor
Very low (1 point)	Does not demonstrate understanding of the context.
Low (2 points)	Demonstrates a basic understanding of the context but with errors.
Basic (3 points)	Demonstrates a general understanding of the context.
Intermediate (4 points)	Demonstrates a detailed and accurate understanding of the context.
High (5 points)	Demonstrates a deep and sophisticated understanding of the context, including subtle details.
Identification of Emotions	**Descriptor**
Very Low (1 point)	Does not identify the speakers' emotions.
Low (2 points)	Identifies some basic emotions but with errors.
Basic (3 points)	Correctly identifies the main emotions.
Intermediate (4 points)	Identifies a wide range of emotions and justifies them.
High (5 points)	Identifies complex and subtle emotions and analyzes how they interrelate.

Inference of Intentions	Descriptor
Very Low (1 point)	Unable to infer the speakers' intentions.
Low (2 points)	Makes basic inferences about the intentions, but they are incorrect or incomplete.
Basic (3 points)	Makes correct inferences about the main intentions.
Intermediate (4 points)	Makes precise and detailed inferences about the intentions, considering different perspectives.
High (5 points)	Makes original and sophisticated inferences about the intentions, demonstrating a high level of understanding.
Recognition of Implications	**Descriptor**
Very Low (1 point)	Does not recognize the implications of what is said.
Low (2 points)	Recognizes some superficial implications.
Basic (3 points)	Recognizes the most important implications.
Intermediate (4 points)	Recognizes a wide range of implications and their possible consequences.
High (5 points)	Recognizes complex and abstract implications and analyzes their long-term effects.
Justification of Inferences	**Descriptor**
Very Low (1 point)	Does not justify their inferences.

Low (2 points)	Justifies their inferences vaguely or with little evidence.
Basic (3 points)	Justifies their inferences with evidence from the audio, but incompletely.
Intermediate (4 points)	Justifies their inferences clearly and completely, using multiple sources of evidence.
High (5 points)	Justifies their inferences in a sophisticated manner, considering different possible interpretations

Originality	Descriptor
Very Low (1 point)	The responses are common and predictable.
Low (2 points)	The responses show some degree of originality but are superficial.
Basic (3 points)	The responses are original and show critical thinking.
Intermediate (4 points)	The responses are highly original and demonstrate creative thinking.
High (5 points)	The responses are exceptionally original and offer new perspectives.

The scores of each participant were then transferred to the matrix for evaluating listening inferential skills (LIS) individually (see Table 5) to record the baseline for starting the implementation of the pedagogical approach.

Table 5

T5 - Matrix for evaluating Listening Inferential Skills (LIS)

Question	Text Understanding	Emotion Identification	Emotion Inference	Implication Recognition	Justification	Originality
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Total						

Note. Answers are scored on a 1- 5 scale based on the scale descriptor.

After completion of the matrix for each participant, the data were consolidated and grouped to identify the proficiency of participants based on the performance table (see Table 6).

Table 6

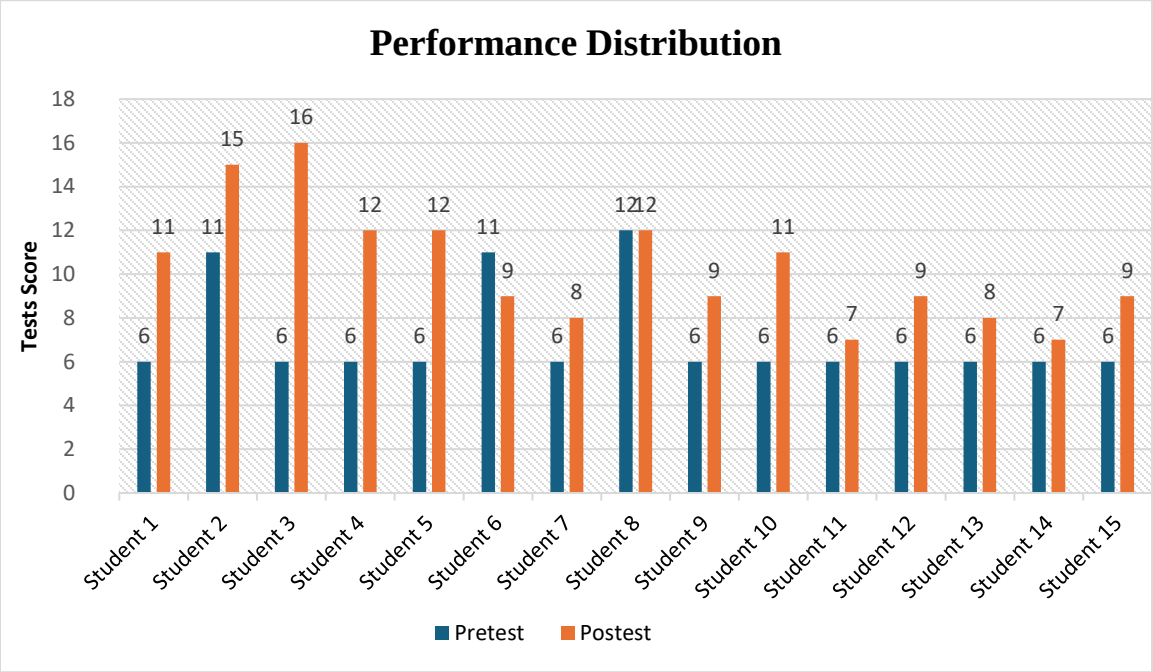
T6 - Performance Table

Rank	Description
1-6 points (Very Low)	The student demonstrates a very limited understanding of the criterion. They cannot apply the concept in different contexts.
7-12 points (Low)	The student has a basic understanding of the criterion but struggles to apply it in more complex situations.
13-18 points (Basic)	The student demonstrates an adequate understanding of the criterion and can apply it in common situations. However, they struggle in more complex situations.
19-24 points (Intermediate)	The student demonstrates a solid mastery of the criterion and can apply it in a variety of situations. However, they may struggle to apply the criterion to completely new situations.
25-30 points (High)	The student demonstrates an exceptional mastery of the criterion. They can apply the criterion flexibly and creatively in any situation.

This exercise was done for both pretest and posttest, obtaining the following results presented in Figure 4.

Figure 4

Test Performance Distribution



The analysis of the pretest and posttest results allowed for a better understanding of the development of LIS among SENA CTAPT learners and the effects of the proposed intervention. In this sense, the results indicated a general improvement in LIS, concurring with the notion that structured exposure to listening video clips from Voscreen, combined with strategic learning approaches like the implementation of inferential questions, enhances LIS. In the pretest, for example, the majority of participants got results within the "very low" performance category (1-6 points), which indicates that their abilities to understand spoken texts, identify emotions, infer meaning, recognize implications, justify inferences, and demonstrate originality were still under the minimum threshold. The results from the pretest were also consistent with the first identified problem that had to do with students struggling with inferential listening tasks during their English course. These results also concurred with previous studies suggesting that L2 learners

often struggle with inferential listening due to challenges in processing auditory input and making sense of implicit meanings (Rost, 2024; Vandergrift & Goh, 2022). The students' limited performance in the pretest suggested that they lacked enough exposure to authentic listening materials that require inference-making and that they may not have been explicitly trained in inferencing strategies.

After completion of the intervention, the posttest results demonstrated a significant improvement. Although none of the students reached the “high” category (25-30 points), an important number moved from the “very low” (1-6 points) and "low" (7-12 points) categories into the "basic" (13-18 points) range. These results indicated that learners slightly develop the ability to extract meaning from spoken content, concurring with the notion that LIS can be explicitly taught and improved with appropriate instructional strategies. These findings also concurred with the literature on metacognitive listening strategies, which emphasize that guiding learners through a structured approach to listening can enhance comprehension and inferencing (Chamot, 2008; Goh, 2014)

Additionally, these results also provided a clear view on how students became more acquainted with using contextual clues, prior knowledge, and linguistic hints to infer meaning. This is consistent with Vandergrift and Goh (2022) assertion that successful L2 listeners actively engage with listening texts by predicting, confirming, and adjusting their interpretations. The data also supported Newton's (2018) findings that both proficient and less proficient listeners rely on inference-making to bridge gaps in their comprehension, particularly when faced with unfamiliar vocabulary or implicit messages.

Furthermore, the students’ slightly improved ability to justify their inferences and recognize implicit implications relates to Kim’s (2016) research on the role of inference-making

in listening comprehension where he argues that integrating textual information with background knowledge is essential for proficient listening, a skill that appears to have been developed through the intervention.

The general progress observed in the posttest results is consistent with the idea that explicit instruction in listening strategies contributes to improved comprehension and inferencing skills. Vandergrift and Goh (2022) point out the importance of strategy instruction in developing listening proficiency, particularly when it involves modeling and guided practice. The improvement observed in the scores concurred with Chamot's framework for strategy instruction, which includes the activation of prior knowledge, modeling inferencing strategies, guided practice, and the gradual transition to independent use of these strategies. Additionally, the impact of the structured listening practice through Voscreen is consistent with Rost's (2024) studies that indicate that digital tools provide meaningful listening experiences that enhance comprehension. In this sense, the interactive nature of the listening exercises and the authenticity of video clips played a crucial role in helping learners engage more deeply with the audio content, making it easier for them to recognize implied meanings and justify their responses.

Categories

The data analysis process of this study was conducted through a descriptive analysis that provided a broad overview of the participants' performance, before and after the implementation of the proposal. This approach to data analysis not only allowed the researcher to better understand the behavior of participants during the implementation but also helped understand the good things about it and those areas of improvement. The data analysis process conducted within this study required a high degree of systematization, organization, and interpretation that led to

six main categories: understanding of the text, identification of emotions, inference of intentions, recognition of implications, justification of inferences, and originality.

Understanding the Context

This category refers to the level of understanding of the general context in a communicative situation, where participants can identify places, time, and the relationship between the speakers. After completion of the intervention, participants' responses provided key information to understand how their ability to understand the context changed throughout the intervention. In an initial stage, participants demonstrated to be very dependent on surface-level information within video clips to determine the context and normally struggled to recognize implicit hints. This was evidenced in their responses in the pretest, which were generally vague as they overgeneralized responses, for instance, some students tend to respond "I think they are outside" instead of specifying that the scene in the video clip was occurring in a park or street. Additionally, the limited vocabulary generally caused the misinterpretation of the dialogue, leading some participants to make mistakes in interpreting the setting where the video clips were taking place.

For instance, one participant initially answered the question "Where and when is the scene taking place?" with "Maybe at home, but I'm not sure," when the video clip was providing clues for an office with telephones and employees in formal attire.

It was then noticed how participants were slightly progressing toward their ability to recognize explicit contextual markers such as dialogue inference (e.g., you could get hit by a car!, suggesting the middle of a road as a potential setting for the video clip), sound effects (e.g., the honking and traffic, suggesting a city environment and visual elements.

Another significant advancement in understanding the context was the ability to infer time and place using indirect hints. For instance, some students escalated beyond explicit information and used reasoning based on the tone and speech patterns, the situational knowledge, and the contextual shifts. On the first hand, tone and speech patterns were key to helping participants to better understand the context, for instance, hearing a formal conversation provided hints for a professional setting. A similar case occurs with situational knowledge, where conversations about assignments or tasks led participants to relate to school or educational settings. Contextual shifts, on the other hand, also played an important role in participants' progression toward understanding contexts, for example, by identifying when a scene transitioned from a friendly conversation to a conflict. Even though most participants progressed slightly in this area, a few of them showed minimal or no improvement in this criterion due to several reasons, like focusing only on direct dialogues, struggling with inference-making and giving very generic responses.

From the analysis of this criterion, three key trends could be identified. On the first hand, students who started at a very low level (6 points) improved their ability to recognize explicit contextual markers, but they still show some difficulties in making deeper inferences and comments. On the other hand, students who were already at a basic level (11-12 points) showed slight improvements on their answers as they could make more precise and justified contextual interpretations of the target video clips. On the other hand, a few participants did not show significant improvement in this criterion, perhaps due to the continued difficulties in inference-making or a lack of exposure to more varied listening materials.

Identification of Emotions

This category refers to the ability to go beyond the literal meaning of words and analyze tone, intonation, facial expressions, and situational context. At the initial stage, participants struggled to identify emotions accurately, often depending on word meaning instead of considering the tone, pitch, or situational hints. Some of the most common challenges that could be perceived during the initial stage of the intervention had to do with misinterpreting emotions, giving generic emotional descriptions of the scenes, or even ignoring non-verbal hints within video clips. Some of the reasons behind misinterpreting emotions had to do with the fact that participants assumed that a neutral dialogue meant characters were happy or at ease, or confusing anger with excitement. A similar pattern was observed at the time of providing information about a character's emotional status where most participants tended to generalize descriptions by using expressions like "they are okay, maybe happy or perhaps sad."

After exposure to repeated listening practice with varied contexts in Voscreen, many students improved their ability to recognize explicit emotional hints such as intonation changes, emphasis on specific words, and pacing and hesitations. For example, participants discovered that intonation changes provide a description of the characters' upcoming mood, where rising the pitch generally implied excitement and lowering the pitch implied disappointment. Also, participants related to the characters' voice tone and speed to uncertainty or discomfort.

Moreover, some students showed slight improvements at the time of making references about emotions based on the situation as they were no longer just identifying how something was said, but they were also paying close attention to why characters felt in certain ways. At that point, it was observed that participants began to link emotions to context, for example, differentiating between a character feeling nervous rather than sad in particular situations like a

job interview, just to cite an example. They also began to recognize mixed or conflicting emotions, for instance, by understanding that a character could be both relieved and anxious at the same time.

However, while some participants showed improvements, some of them continued to struggle with inference-making, especially because they tended to overgeneralize, had difficulties distinguishing between similar emotions, and were not able to justify their answers regardless of the prompts in the videos. In general, there were three important trends spotted along the intervention and concerning the identification of emotions. One first trend showed that students who started at a very low level (6 points) improved their ability to recognize basic emotional expressions but still struggled with deeper inferences. On a second trend, students who were already at a basic level (11-12 points) improved their answers, taking into consideration the tone and contextual clues, allowing them to demonstrate more elaborated and justified interpretations. The third trend indicated that a few participants showed little change in this criterion and suggested the implementation of additional strategies, like making direct comparisons of different emotional tones. Generally speaking, the posttest results revealed that most participants improved their ability to recognize and interpret emotions, passing from basic identification to more elaborated and context-based inferences. While progress was varied among participants, the use of Voscreen appeared to help students develop a greater sensitivity to identifying vocal tone and understanding situational hints are ultimately key elements in improving listening inferential skills.

Inference of Intentions

This category refers to the ability of a person to infer a speaker's intentions and go beyond the literal meaning of words and analyze tone, choice of words, context, and implicit

hints to determine what the speaker truly means or wants to achieve. In the initial stage and based on the pretest results, many students struggled to infer the intentions because they were taking statements at face value instead of recognizing hidden reasons or sarcasm. Similarly, they tended to ignore non-verbal hints that suggested implicit meaning, for example, the tone shifts, pauses, or emphasis on certain words. During the intervention, participants showed slight improvements, especially at the time of recognizing when words carried implicit meaning, whether the speakers' intentions related to sarcasm, persuasion, or hidden frustration. They also improved their ability to use the tone of voice as a key indicator of a speaker's real intention, rather than focusing only on words, and paid more attention to the situational context to better understand that a speaker could say something indirectly.

Apart from showing slight advancement in recognizing sarcasm and indirect speech, some students also advanced in identifying hidden reasons behind statements. Specifically, they started to detect persuasion attempts, for example when characters tried to subtly convince somebody else rather than showing their intent directly. They also started to recognize when characters were being deceptive or withholding any kind of information. Although most participants showed some degree of improvement, a few students still struggled to infer deeper intentions, particularly in recognizing subtle manipulation, distinguishing between genuine and forced politeness, and especially at the time of justifying their responses with clear reasoning, as they often provided short and unsupported answers. Generally speaking, the results indicated that three major trends emerged regarding participants' ability to infer intentions. The first trend indicated that participants who initially scored very low (6 points) improved in recognizing basic indirect speech but still had difficulties with more complex intentions. A second trend showed that participants who started at a low level (11-12 points) refined their ability to justify their

responses and used tone and context more effectively. A last trend indicated that a few students showed little change, which suggests additional strategies to reinforce inference skills. All in all, the results showed that most participants developed a stronger ability to infer intentions as they moved from making literal interpretations to a more contextual understanding of speaker intentions.

Recognition of Implications

This category refers to the ability of the participant to go beyond what is explicitly stated and identify the unstated consequences, assumptions, or underlying meanings in conversations. This skill is very important for understanding indirect messages, for predicting results in conversations and understanding subtle conversations. Before starting the intervention, the results from the pretest showed that some students struggled to identify unstated consequences or deeper meanings as they overly focused on literal interpretations, they had difficulties connecting prior information with future outcomes, and their responses were generally unclear or with unsupported reasoning.

Along the intervention, participants began to recognize how certain words, actions, and expressions implied future outcomes. This could be evidenced as participants started to identify when a character's decision could lead to specific consequences, even if not directly stated, they also started to notice small hints in the characters' facial expressions, pauses, and shifts in their voice tone. In the same way, participants started to make more structured guesses about what could happen next based on the contextual hints. Apart from predicting future events, some students also showed advancements in recognizing how words and actions implied emotions. They particularly improved in understanding how a statement affected others emotionally, for example, how an apology could be sincere or forced.

Another key part of recognizing implications is understanding when a speaker implies something without directly saying it. Some students particularly showed progress in identifying hidden warnings, for example, when a character subtly expressed doubt without explicitly stating it. Also, they advanced in detecting underlying assumptions in a statement, for instance, realizing that speakers often take certain ideas for granted. In the same way, they moved forward into recognizing when an action indirectly represented an intention or future consequence.

It is important to mention, though, that even when most participants improved, some still struggled with more complex, multi-layered implications, referring to those statements that contained sarcasm or double meanings, they also kept struggling in differentiating between strong and weak implications, as they sometimes made assumptions without enough evidence. Similarly, they showed difficulties at the time of clearly justifying their inferences, and this was specifically noticed in the responses provided for some video clips, where their answers were generally vague, for instance by responding "something bad might happen" and not providing further explanation on the possible causes and implications.

Based on the pretest and posttest comparisons, three major patterns emerged within this criterion. On the first hand, it was observed that participants who initially struggled the most (6 points in pretest) improved in making basic inferences but still needed stronger justification. Also, participants in the low-level range (11-12 points in pretest) improved in connecting contextual hints to implications and started recognizing indirect meanings. Ultimately, some participants showed minimal change along the intervention, suggesting that additional practice and guidance might be needed to reinforce this skill.

Justification of Inferences

This category refers to those skills required by participants to not only make inferences but also support those inferences with clear reasons and evidence from the audio-visual material. This skill is essential for critical thinking, argumentation, and deeper listening comprehension, as it ensures that conclusions are not just assumptions but are based on textual, tonal, or contextual hints. Before starting the intervention, through the pretest, it was evidenced that some participants provided weak or incomplete justifications when they were asked why they arrived at a particular inference. Some of the most common findings in participants' justifications included the fact of stating a conclusion without explaining why; in other words, participants tended to provide vague and unsupported answers to the target prompts. Additionally, it was evidenced that they tended to repeat the inference instead of providing the respective justification, and when they did provide a justification, they normally tended to rely on personal assumptions rather than the evidence within the video clip. However, as participants delved into the intervention, they gradually showed some improvements, especially at the time of identifying specific words, tones, or visual hints that led them to an inference, and they also started to articulate their reasoning more clearly, making it possible to reduce the use of vague and repetitive statements.

Some participants also improved in justifying emotional inferences by linking characters' tone of voice, body language, or contextual factors to their conclusions. This advancement was particularly observed in their ability to recognize when emotions were implied rather than explicitly stated, also at the time of using a combination of verbal and non-verbal hints to justify emotional interpretations. Similarly, they started to make stronger connections between a character's situation and their likely feelings.

Apart from describing the characters' emotions and behaviors, some participants also began to justify inferences considering the identification of cause-and-effect relationships, for instance, they moved forward into explaining why a character's actions triggered a certain consequence, also they advanced in supporting their predictions based on more logical reasoning and in the same way started to distinguish between strong and weak justifications.

Even though significant improvement was observed along the intervention, it was also noticed that some participants still struggled to be more specific in their justifications, they tended to be too general in their justifications. Another key factor spotted on these participants was that they tended to confuse assumption with inference, this is to say that they kept relying more on prior knowledge or personal beliefs rather than actual hints from the video clips. Similarly, they still struggled in responding more completely and deeply, this was observed as they continued giving partial justifications rather than more structured and complete ones.

The results from the comparison of the pretest and posttest also revealed three important trends within this category. On the one hand, it was observed that participants who initially gave vague and unsupported answers (scoring 6 points in the pretest) improved by including specific evidence, though some justifications remained incomplete. On the other hand, it was also observed that participants who had a basic understanding (11-12 points in the pretest) improved in linking their inferences to multiple pieces of evidence, strengthening their reasoning. Also, a few participants showed minimal progress, indicating that further practice and exposure to more video clips might be needed. In general terms, it was observed that the intervention helped most participants move from vague and unsupported justifications to clearer, more evidence-based answers. Some of the reasons behind these advancements include the repeated exposure to video-based inference drills, the examples of weak and strong justification shown to participants, and

the clarification of how the use of "because" helped connect the inference with supporting details from the video clips.

Originality

This category refers to the participants' ability to develop unique, insightful, and very creative responses rather than simply indicating obvious or repetitive answers within the target video clips. Throughout the intervention, participants showed varying levels of improvement in their ability to provide original responses to the proposed questions. In the initial stage, for instance, the pretest results revealed that most participants provided predictable answers, indicating a lack of deeper involvement with the video clips. It was observed that participants tended to re-state obvious responses from the video rather than going beyond and providing unique answers. Also, their responses showed a limited elaboration, almost limited to one, two, or three words, indicating a key area of improvement. Similarly, they tended to rely on very predictable and common interpretations without exploring more creative and genuine viewpoints.

As participants moved forward into the intervention, they gradually moved beyond simple responses and began writing more personal and creative answers. At this point, they started to use elements from the video clips to support their interpretations, they also explored different alternatives beyond those obvious within the video clips, and they started to introduce more personal viewpoints based on broader content from scenes and personal experiences. One area where originality was particularly evident was in predicting the possible consequences of a character's decisions. This was observed as initially, responses were simple and repetitive but then participants began to explore more possibilities, showing more creative responses because they considered several outcomes in a video clip scene rather than assuming just one outcome.

Another key area where originality was perceived relates to how some participants demonstrated originality through humor or unconventional interpretations, for example, in a scene where a character seemed frustrated, participants excelled in making relatable, humorous connections and providing an insightful psychological angle rather than just stating the emotion.

Despite the aforementioned improvements, some participants continued to struggle with originality especially because through their responses it was observed that they felt afraid of making mistakes especially because their answers were safe and predictable. Another key factor to lack of originality relied on their limited vocabulary that restricted their capacity to express more genuine ideas. Similarly, they tended to rely more on external knowledge rather than prioritizing their interpretations.

The findings from both the pretest and posttest revealed major trends in participants' development of originality. On the first hand, it was observed that participants who initially gave general answers (scoring 6 points in the pretest) showed moderate improvement as they started to add more context, though some still struggled with creativity. A second trend showed that participants with a basic understanding (11-12 points in the pretest) improved as they explored multiple possibilities and included more personal details. A final trend revealed that a few participants developed truly original responses as they used funny, psychological, and alternative perspectives.

The Appropriateness of Voscreen for Enhancing LIS in L2 Learners

As stated earlier in this paper, listening comprehension in a second language (L2) remains one of the most challenging skills to develop, particularly when it involves inferencing, an ability that requires learners to derive implicit meanings from spoken language. Research has demonstrated that LIS are crucial for effective communication, as they enable listeners to bridge

gaps in understanding by integrating linguistic, contextual, and background knowledge (Rost, 2024; Vandergrift & Goh, 2022). Given the complexity of inference-making in listening, the integration of digital tools that provide interactive and meaningful exposure to spoken language has become an essential component for modern LIS teaching. Voscreen, a web-based and mobile application designed to enhance language learning through short video clips, emerged as a particularly relevant tool for the development of LIS. Considering the checklist for evaluating Voscreen's pedagogical structure, the platform demonstrated to be consistent in helping SENA participants to slightly develop their LIS. Some functionalities that made the LIS teaching experience more engaging and interactive include the platform's interactive nature and exposure to authentic spoken language through video clips.

Other features that influenced the development of the project relied on the operability of the application as it works on the principle of implicit and contextualized learning, where users are exposed to short video clips extracted from a wide range of real-life sources such as movies, TV shows, and documentaries. These video clips provided learners with authentic language input that included natural speech patterns, varied accents, idiomatic expressions, and nonverbal cues. The inclusion of such authentic materials concurred with research pointing out the importance of real-world listening experiences in enhancing inferential comprehension (Field, 2019; Newton, 2018)

Voscreen contributed to the improvement of LIS in certain ways, each of which corresponds to a specific aspect of inferential reasoning in listening comprehension. Initially, we overviewed the exposure to authentic language and implicit meaning, where Voscreen allowed learners to be exposed to a wide selection of video clips, which included dialogues in which speakers used sarcasm, irony, or indirect speech, elements that challenged learners to go beyond

literal interpretation and be immersed in deeper inferential reasoning. The application also facilitated the integration of multiple content modalities such as audio, visual, and contextual. This integration played an important role in helping develop LIS, as participants could rely upon different sources of information to construct meaning. Even though video clips within the application were relatively short, they were visually rich and demanded participants to delve into their prior knowledge, the linguistic context, and the paralinguistic cues such as the tone of voice or facial expression from the video clips' characters.

Bearing in mind that Voscreen itself contains a vast number of random video clips, the meticulous process of selecting inference-based video clips also played an important role in helping participants develop LIS. This selection, along with the slightly incremental difficulty, allowed learners to progress from very basic comprehension tasks to slightly more complex ones. This structured progression concurred with Field (2019) as he recommends that teaching listening should be scaffolded to help learners develop higher-order comprehension skills gradually.

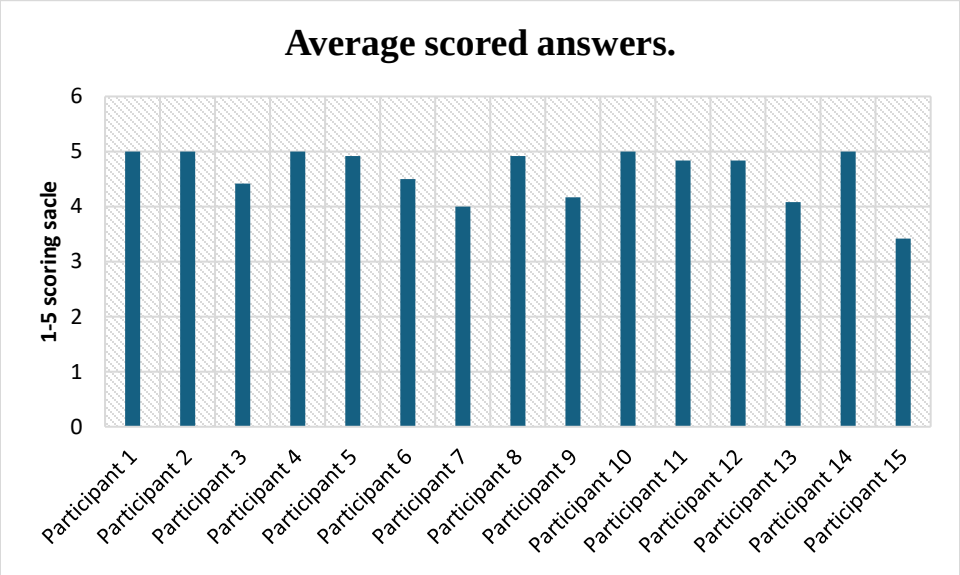
Therefore, the findings of this study ratified the relevance of Voscreen as a supplementary digital resource for developing LIS. Even though the improvements observed in this study were modest, they indicated that digital tools such as Voscreen can play a boosting role in developing LIS when integrated into a structured listening curriculum.

Participants' Perceptions Towards the Proposal Intervention

After completion of the intervention participants took a final perception survey to better understand their experience in participating and their perception toward improving their LIS. The results of the survey were grouped, averaged, and consolidated in the following chart.

Figure 5

Average Scored Answers



The survey responses, rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), provided meaningful information on the impact of Voscreen on the learners' listening comprehension and inferential abilities. A detailed examination of the responses indicated a very positive reception of Voscreen as a learning tool. For example, the first statement, "Voscreen has helped me improve my ability to understand what is not explicitly said in a video clip," received consistently high scores, with most participants selecting 5 (strongly agree) indicating that Voscreen was perceived as helping participants in deciphering implicit meanings, a crucial aspect of LIS. Similarly, the statement, "Voscreen exercises have allowed me to understand general and specific contexts in authentic video clips," also demonstrated predominantly high ratings, reinforcing the idea that the application facilitated comprehension of specific details in audiovisual content. Another important aspect evaluated within the instrument was the ability to recognize emotions and intentions within real-life-based video clips. The statements, "Voscreen has helped me recognize emotions of speakers in a wide

range of video clips" and "I consider Voscreen has allowed me to decipher the intention of speakers within real-life based video clips," also obtained consistently high ratings, indicating that participants found Voscreen beneficial in identifying the emotional tones and communicative intentions of speakers, both essential elements of LIS. Furthermore, the ability to infer consequences and implications of spoken content was explored through the statement, "I think Voscreen has helped me understand the consequences and implications of what is said in a video clip." Again, the responses revealed a strong agreement, demonstrating that Voscreen helped learners in comprehending deeper areas of meaning beyond the literal interpretation of speech.

In terms of justifying inferences with evidence, a key component of LIS, the statement, "I consider Voscreen has taught me to support my inferences with evidence from the video clips," received a high level of agreement, concurring with the pedagogical value of Voscreen in reinforcing evidence-based reasoning and argumentation, which are integral to critical listening skills. The general usability and practicality of Voscreen were also rated positively. For example in statements such as "I consider Voscreen to be a useful tool for practicing auditory inference," "Voscreen exercises have helped me better understand different accents and dialects," and "The Voscreen interface is easy to use and allows me to focus on improving my inferential skills" were scored with strong agreement, indicating that the application's user-friendliness and its effectiveness in exposing learners to a wide range of linguistic variations, promoted adaptability in listening comprehension.

Participants also recognized the relevance of Voscreen exercises in developing LIS, as reflected in their responses to the statement, "I believe Voscreen exercises are relevant in the development of my listening inferential skills." Additionally, features such as the ability to pause

and rewind video clips were particularly appreciated, with high ratings given to the statement, "I like that Voscreen allows me to pause and rewind video clips to analyze them better." This indicated that learners valued the flexibility in Voscreen that allowed them to engage with the content at their own pace and reinforced their understanding.

In general terms, the results revealed a highly favorable stance towards Voscreen as a tool for enhancing LIS as participants consistently rated it as an appropriate tool in developing inferential listening skills thanks to the wide range of authentic video clips that allowed the practice of recognizing emotions and intentions, understanding implications, supporting inferences with evidence, and adapting to different accents and dialects. These findings concurred with the existing literature that points out the importance of multimedia tools in facilitating the development of inferential listening abilities and engaging learners in authentic, context-rich language experiences.

Discussions and Conclusions

This chapter presents the significance of the results, the pedagogical and research implications for the field of study, the research limitations, recommendations for future studies, and the conclusions of the data and the whole research process to answer the main research question: How can SENA learners' listening inferential skills be developed through Voscreen? Accordingly, following the analysis of the data and the description of the categories, which emerged from the theoretical foundations, this chapter aims to inform about relevance of comprehending the criteria framework and the appropriateness of employing Voscreen, as these elements hold significant implications for future research within the broader field of language teaching and learning.

Significance of the Results

The research question guiding this action research project, "How can SENA learners' listening inferential skills be developed through Voscreen?" was addressed through the cyclical process rooted in Classroom Action Research principles through planning, action, observation, and reflection. Each step allowed the integration of Voscreen, the application that facilitated the combination of authentic audiovisual input with strategically designed listening drills that served as the core of the intervention. The whole process of pre-testing, implementation of inferential-based listening sessions, post-testing, and the participants' feedback analysis allowed this project to further explore the ways in which Voscreen contributed to the development of LIS in the context of a SENA CTAPT program.

The first specific objective, "To establish a research-based criteria framework for evaluating listening inferential skills," was achieved through an in-depth review of theoretical models and empirical studies that outline the components of inferential comprehension and

provide foundations for a detailed rubric designed to assess six key inferential dimensions: understanding the context, identification of emotions, inference of intentions, recognition of implications, justification of inferences, and originality of interpretation. This rubric was validated and applied to both pre- and post-intervention assessments, allowing a structured and reliable way to measure participants' level of proficiency in inference making.

The second specific objective, "To analyze the pedagogical structure of Voscreen to approach listening inferential skills," was achieved by critically examining the application's instructional and pedagogical design. This was done by implementing a checklist designed with more than ten criteria to check on the appropriateness of the application towards the development of LIS. Similarly, a perception survey was also applied at the end of the intervention to reinforce participants' insights towards the application's interface and general features. The analysis and perception confirmed that Voscreen helped participants improve their LIS by exposing them to authentic material and providing an intuitive interface.

The third specific objective, "To develop a pedagogical methodology to enhance listening inferential skills," was achieved by implementing a ten-session action plan that integrated Voscreen into structured listening drills. This methodology followed the strategic instruction model proposed by Chamot (2008) and further developed by Vandergrift and Goh (2022), which includes activating prior knowledge, modeling strategies, guided and independent practice, and reflective assessment. The findings from the pretest and the posttest, along with the qualitative insights from the survey, demonstrated that using inferential questions along with Voscreen supported the development of LIS in SENA learners.

The findings of this study also contribute to the expanding body of research, especially in the technology-enhanced language learning field and specifically in the area of listening

inferential skills (LIS). The results indicated that Voscreen, as a digital resource, provided learners with opportunities to enhance their capacity to infer meaning from audiovisual input, a key component of communicative competence. Furthermore, the study outlined the role of the structured intervention and how it helped participants scaffold their abilities to understand context, identify emotions, infer intentions, recognize implications, justify inferences, and demonstrate originality in their interpretations.

The significance of these findings also resides in the implications for pedagogical practices in language instruction, particularly within the context of blended learning and the integration of digital resources. In light of the increasing use of technological tools for second language acquisition (L2), it is essential to understand how learners perceive and engage with the affordances these tools offer. The present study revealed that learners who demonstrated interest and active engagement along the intervention were able to improve their LIS at a faster rate than those who engaged with the tasks more passively.

Additionally, the study excels in the role of inferential listening in the broader field of communicative competence. As emphasized by Rost (2024), effective listening goes beyond the simple decoding of linguistic input and involves the active construction of meaning from multiple sources of information. The intervention with Voscreen demonstrated that even learners with low proficiency levels could enhance their LIS when exposed to the target video clips and the development of the inferencing questions. This finding supports previous research (Vandergrift & Goh, 2022) who emphasize that metacognitive instruction in listening not only enhances learners' awareness of the listening process but also fosters more effective processing and interpretation of spoken discourse.

The pedagogical implications of these findings are also significant for educators who are willing to integrate digital resources into their listening sessions. The study suggests that Voscreen can be a valuable supplementary resource, as long as learners are also willing to participate and under a well-structured plan, a well-defined criteria framework, and inference-based listening tasks. Without these elements, learners may be at risk of interacting with the tool only at a superficial level, significantly reducing the potential benefits of LIS development.

Ultimately, this study also contributes to the field of second language acquisition specifically in the development of inferential listening skills as it outlines a way in which learners can engage with audiovisual input within a structured yet flexible learning environment that connects the role of technological resources, cognitive, and sociocultural factors in the language learning process. Future research may further explore how different learner profiles, such as proficiency levels, learning styles, and cultural backgrounds, interact with digital listening tools to refine pedagogical approaches and advance methodologies in digital language learning.

Research Implications for the Field of Study

This research study has contributed to a clearer understanding of how learners develop Listening Inferential Skills (LIS) through the use of Voscreen and shows the important role that digital tools can play in improving inferential listening comprehension. The findings show the potential of technology-based learning environments to help learners understand context, recognize emotions, make inferences, and think critically when completing listening tasks. These results have important implications for teaching, curriculum development, and future research in language education.

For language teachers, this study points out the importance of teaching inferential listening strategies directly and using audiovisual tools in listening lessons. Voscreen, for example, as a digital resource, allowed students to work with authentic spoken language in short, manageable, and interactive formats, which helped them identify hidden meanings, emotions, and contextual hints. This study also suggests that teachers should include similar tools in their lessons and design strategies that help students enhance their inferential skills.

For curriculum designers, the findings show that listening instruction should go beyond understanding literal meaning and therefore, listening tasks should include activities that help learners connect what they already know with new, implied information from spoken texts. This can be done by creating lessons that combine pre-listening, while-listening, and post-listening tasks focused on developing inference-making abilities. Curriculum designers should also consider using game-based tools like Voscreen to make lessons more interactive and motivating, supporting learner autonomy.

From a research point of view, this study complements the existing research on technology-enhanced language learning and the use of audiovisual tools in developing listening comprehension. In terms of methodology, this study shows how small-scale interventions can help measure the learners' progress over time and the use of pretests, posttests, and qualitative data gave a detailed view of how students improved their LIS, providing a criteria framework for future research that aims to assess inferential listening skills through digital tools like Voscreen.

Although this study focused on a particular group of learners, its results can help guide major discussions on how to teach listening inference skills using audiovisual input in different educational contexts and therefore future studies can examine how well learners retain LIS over

longer periods and compare different digital platforms to see which are most effective in helping students develop inferential listening abilities in a wide range of populations.

Research Limitations of the Present Study

It is important to underline the challenges and limitations encountered during the development of this study. On the first hand, it is necessary to remember that the main objective of this study was to examine how learners developed listening inferential skills (LIS) through the use of Voscreen, a digital resource designed for language learning. Although the findings revealed valuable information, several limitations should be taken into account when interpreting the results.

The first limitation is related to the selection of participants. This study particularly involved a small sample of students, which, while appropriate for an action research design, limits the generalizability of the findings. Since participants had different levels of digital competence and prior exposure to audiovisual input, their progress with the LIS intervention may not entirely reflect on larger learner populations. Additionally, learners' motivation, levels of engagement, and pre-existing inferential skills could have affected their performance, making it difficult to attribute all the progress only to the intervention.

The second limitation concerns the nature of the study, and the type of data collected. Since LIS is an internal cognitive process, its measurement relies largely on qualitative assessments and self-reported data. Although the study applied pretests, posttests, and open-ended questions to monitor the learners' progress, the subjective nature of inferencing skills presents difficulties in assuring complete accuracy. For instance, some participants may have misunderstood certain questions or responses influenced by factors such as test anxiety or unfamiliarity with the assessment format.

A third limitation involves the duration of the intervention. This study was particularly conducted over a limited number of sessions, which, although enough to observe short-term improvements, does not allow conclusions about long-term retention or the transferability of LIS, as developing listening inferential skills requires consistent practice and exposure to a wide range of audiovisual content. Therefore, it is not quite clear whether the improvements observed during the study would persist over time or manifest in real-life communication contexts. In this way, future studies could implement longitudinal designs to further explore the durability of these changes and their impact on language proficiency in general.

Finally, the study's context and other external factors must also be considered. For example, this research was conducted in a controlled educational scenario, which may not accurately represent the complexity of authentic language use. While it was evidenced that Voscreen is a useful resource, it does not emulate the spontaneity and unpredictability of real-life conversations, where listeners are required to infer meaning in real-time and under changing conditions. Moreover, factors such as learners' access to technology, internet connectivity, and personal study habits may have affected their involvement with the tool. These external variables, though beyond the scope of this study, are important considerations for future research.

It is important to mention that, despite these limitations, this study gives useful perspectives on how digital tools can help develop listening inferential skills (LIS) and provides practical suggestions for teachers who want to use technology in listening lessons. However, the results should be applied carefully to other situations or groups of learners. Then, more research is needed to explore the long-term impact, wider application, and flexibility of using Voscreen in different educational contexts.

Recommendations for Further Research

Considering the small scale of this study and the complexity of developing Listening Inferential Skills (LIS) through Voscreen, further research is needed to build on these findings. This study introduces an initial look at how digital tools, like Voscreen, can help develop inferential listening comprehension, and additional research could give a more profound understanding of how effective technology-based listening drills can be.

One important direction for future research is to study the long-term effects of Voscreen on the development of LIS. In this case, a longitudinal study that follows learners over a longer period would help researchers discover whether learners retain these skills and use them in real-life listening situations. Also, this research could explore whether regular exposure to audiovisual input leads to long-lasting improvements in understanding context, recognizing emotions, making inferences, and using critical listening skills.

Another area for future research is to compare Voscreen with other digital tools designed for listening practice. Here, studies could investigate whether other platforms or teaching methods produce similar or better results in helping learners develop LIS. In addition, experimental or quasi-experimental studies could compare traditional listening methods with technology-enhanced ones, making it possible to get more useful information about the role of digital tools in second language acquisition (SLA).

Similarly, future studies should also explore how learner characteristics influence the development of LIS when using Voscreen, for example, factors like language proficiency, learning style, cognitive abilities, and motivation may affect how learners use and benefit from digital listening tools. It would also be useful for future research to involve larger groups of participants and include learners from different institutions. While this study focused on a

specific group, having the opportunity to study a wider and more diverse group of learners in a wide range of educational scenarios could provide broader outcomes and trends. This exercise could involve exploring the use of Voscreen in formal classrooms, in self-study scenarios, or blended learning environments.

Finally, future research should delve into how teachers and learners perceive digital listening tools and qualitative studies could also explore how teachers use Voscreen in their lessons and how students perceive its role in helping them develop LIS. Learning more about teachers' attitudes, teaching strategies, and learners' levels of engagement could lead to better recommendations for how to include technology in the teaching of listening.

Conclusions

The use of digital resources in language learning has received more attention in recent years. However, research on technology-enhanced learning activities, especially those aimed at developing Listening Inferential Skills (LIS), is still limited. This is why this study shows the potential of Voscreen as a digital tool to help learners improve their LIS and emphasizes the role of audiovisual input in helping develop skills such as understanding context, identifying emotions, making inferences, recognizing implications, justifying inferences, and demonstrating originality in responses.

The findings indicate that students improved their LIS through structured and repeated use of Voscreen and therefore, their ability to identify emotions, infer intentions, and justify their conclusions improved, allowing us to understand that regular interaction with audiovisual material enhanced the cognitive processes needed for inferential listening. The results also show that different inferential skills are connected, as advancements in one area, such as recognizing implications, helped students perform better in other areas, such as inferring speakers' intentions.

Despite these positive results, the study also found that some learners still faced difficulties in noticing and responding to implicit linguistic and contextual hints. Particularly, certain students struggled with more complex inferences, especially when visual and auditory information was unclear or contradictory. This concurs with earlier research from (Vandergrift, 2022; Field, 2019), which points out that successful listening requires both mental effort and the use of strategies. In addition, although Voscreen offered an engaging and easy-to-use platform for listening practice, not all learners benefited to the same extent as factors such as previous exposure to English, metacognitive awareness, and personal learning preferences affected how

well students could make use of Voscreen's features. Consequently, this indicates that additional activities and strategies are needed to help all learners benefit fully from the tool.

In conclusion, the study emphasized the importance of digital tools like Voscreen in helping learners develop inferential listening skills, and it also showed that learners do not always notice or use the opportunities these tools offer without guidance. Therefore, there is a need for further teaching strategies that help students recognize, understand, and respond to inferential hints in audiovisual content that will ultimately contribute to stronger listening comprehension skills in English as a Foreign Language (EFL) learning context.

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Appendix

Appendix A

Informed Consent

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA

INFORMED CONSENT

Project title: Improving SENA learners' comprehensive listening skills through the use of Voscreen: A mobile-assisted language learning application.

Researcher:

Oscar Darío Gómez Barrera

odgomezba@unadvirtual.edu.co

3127729944

Universidad Nacional Abierta y a Distancia UNAD, through the institutional research advisor for this research project, has approved to conduct this study. For information on your rights as a research subject, please carefully read the following consent or contact the researcher at the information provided above for further inquiries.

Introduction.

I am currently undertaking a study to explore how the technological application "Voscreen" can help SENA learners to improve their comprehensive listening skills. This form will describe the purpose and nature of the study. Please take whatever time you need to discuss the study with the researcher. The decision to participate or not is yours. If you decide to participate, please sign and date the last line of this form.

Background and purpose of the study.

I am particularly interested in discovering how the application Voscreen may help SENA learners improve their comprehensive listening skills since it is considered one of the most challenging and less-developed skills at the center. We hope to use what we learn to improve the quality of teaching and approach the listening skills, and contribute to the growing body of knowledge in the area of learning languages through the use of mobile-assisted tools like Voscreen.

Why participate in this study?

This study has the potential to expand the knowledge in the area of learning languages through the use of mobile-assisted tools. Therefore, students and center teachers will benefit from the study by experiencing a new way to approach learning and strengthening comprehensive listening skills.

Risks in this study.

The level of risk and inconvenience for possible participants in the research project " Improving SENA learners' comprehensive listening skills through the use of Voscreen: a mobile-assisted language learning application" is low and minimal and therefore it does NOT neither entail any significant risk to their general welfare nor implies discomfort, other than spending time in the implementing and collecting data phases of the research. Nonetheless, the research project will take all necessary measures to guarantee that any arising risk is minimized, and participants will be protected. These protective measures include the use of well-conditioned learning environments in terms of illumination, ventilation, seating comfort and evacuation routes identification.

Total number of participants.

About 20 participants will take part in this study.

General plan.

Participants will initially be invited to an introductory session to get familiarized with the application, then they will conduct a placement test, and eventually they will get a timetable with the minimum time and frequency of log-ins. Also, a series of links will be shared to allow participants to be part of the researcher's Voscreen observation group and previously made playlists.

During the study, the researcher will observe the participants interaction with the platform and will document all the findings in a field note. After completion of the timetable, a posttest and final survey will be conducted.

Length of study.

The study will last 10 sessions.

Confidentiality.

Every effort will be made to keep the collected data confidential and safeguarded. Whenever data from this study is published, your real name will not be used.

Data security.

All the information gathered from the study will be stored in the researcher's computer and encrypted cloud storage. Access to this information will not be part of an external network, other than the institutional one, and will only be accessed by the researcher or authorized personnel from the university.

New findings.

If you are willing to know the findings on this study, we will contact you to explain the results of the study after it has been concluded.

Your rights as participants. Your participation in this study is entirely voluntary. You have the right to leave at any time. Leaving the study will not result in any penalty or affect your

academic or general performance with your center teacher. If you decide to leave, inform your center teacher or researcher. You will still participate in the implementation activities, but nothing you say or do will be used as part of the data.

Problems and questions.

You can always contact the researcher if you have any questions or technical issues.

Email me at odgomezba@unadvirtual.edu.co or contact me at 3127729944. Be aware to contact me only during office hours.

Withdrawal by the researcher.

The researcher may stop the study or take you out of the study at any time, whether you are not strictly following the instructions, you are no longer appropriate for the nature of the study or for any reason that may affect the implementation of the study.

Researcher's Statement.

I have fully explained this study to the participants. I have discussed the procedures and treatments and have answered all of the questions that the participants have asked.

Signature of researcher_____ Date _____

Participant's consent.

I have read and understood the information in this informed consent form. All my questions were answered to my satisfaction. I voluntarily agree to participate in this study.

Your name_____

Your signature_____

Date_____

Appendix B

Checklist for evaluating the pedagogical structure of Voscreen

Objective: To evaluate the pedagogical appropriateness of the application Voscreen in terms of helping students develop Listening Inferential Skills (LIS).

EVALUATION CRITERIA		
Link of application: https://www.voscreen.com/		
Name of evaluator: Oscar Darío Gómez Barrera		
CRITERION COMPLIANCE	**YES**	**NO**
VOSCREEN PEDAGOGICAL STRUCTURE		
Are the activities designed to progressively increase the level of difficulty in auditory inference?	**X**	
Does the platform allow users to choose activities within their target English level and individual needs?	**X**	
Are different levels of listening inferential skills video clips provided so that students can choose according to their abilities?	**X**	
Does the platform offer a wide variety of audiovisual content (movies, series, documentaries, etc.)?	**X**	
Is the content of high quality in terms of audio and video?	**X**	
Does the content represent real-life situations and use natural language?	**X**	
Is the content designed to provide opportunities to improve listening inferential skills?	**X**	

Does the platform provide didactic elements like subtitles or transcripts to facilitate the development of inferential skills?	**X**	
Does the platform provide content to recognize the emotions of speakers in different contexts?	**X**	
Does the platform provide video clips for users to come up with conclusions on possible consequences and implications of what is said in it?	**X**	
Is the platform content culturally varied to include situations and speakers with different accents and origins?	**X**	
Is the platform interface easy to understand and follow for developing inferential comprehension video clips?	**X**	

Appendix C

Data Collection Instrument 1 (The pretest)

Improving SENA learners' listening skills through the use of Voscreen: Action research on Listening Inferential Skills (LIS)

Pretest

Candidate name: _____Date_____

Instructions: Watch the video twice and then answer the following questions according to what you understand. To answer the questions, take into account the following prompts:

1. Where and when do you think the scene is taking place?
2. How do you think the character(s) in the scene feel?
3. What do you think the character(s) want to achieve in the scene?
4. What do you think are the possible consequences of the character(s)' decision?
5. Why do you think the character(s) did, are doing, or will do that? What part of the video leads you to that conclusion?

Video clip 1

1. _____
   _____
2. _____
   _____
3. _____
   _____
4. _____
   _____
   _____
5. _____
   _____

Appendix D

Data Collection Instrument 2 (The Posttest)

Improving SENA learners' listening skills through the use of Voscreen: Action research on Listening Inferential Skills (LIS)

Posttest

Candidate name: _____Date_____

Instructions: Watch the video twice and then answer the following questions according to what you understand. To answer the questions, take into account the following prompts:

1. Where and when do you think the scene is taking place?
2. How do you think the character(s) in the scene feel?
3. What do you think the character(s) want to achieve in the scene?
4. What do you think are the possible consequences of the character(s)' decision?
5. Why do you think the character(s) did, are doing, or will do that? What part of the video leads you to that conclusion?

Video clip 1

1. _____
   _____
2. _____
   _____
3. _____
   _____
4. _____
   _____
   _____
5. _____
   _____

Appendix E

Pedagogical Methodology Sessions 1, 2, 10

Improving Listening Inferential Skills On Voscreen Pedagogical Methodology

SESSION 1, MOMENT 1 – GETTING ACQUAINTED WITH THE PLATFORM AND ACTIVITIES.

Objective: To get acquainted with the Voscreen platform and learn about all its functionalities, such as how to access it, sign up, sign in, join observation groups, create and access playlists.
Instructions: Follow these steps to get ready to start using the platform and the proposed activities.

1. **How to access and register on the platform.**
   - **a)** Go to https://www.voscreen.com/
   - **b)** Click on Sign Up.
   - **c)** Complete the required information (Name, last name, E-mail, password, and first language)

2. **How to access the login in the platform.**
   - **a)** Go to https://www.voscreen.com/
   - **b)** Click on Sign In.
   - **c)** Type in your username and password. (If you forgot your password, click on "forgot your password" and provide your e-mail address)

3. **How to join the observation group.**
   a) Log in to Voscreen
   b) Click on the following link https://www.voscreen.com/observation/details/2be67a3bed/52017/improving-lis

4. **How to see my observation group.**
   a) Go to the upper right corner of the interface.
   b) Click the drop-down list on your name.
   c) Click on observations.
   d) Choose my observation groups.

5. **How to join the playlists.**
   c) Log in to Voscreen.
   d) Click on the following links.

Sessions	**Link to access**
Session 1 – LIS Pretest	https://www.voscreen.com/playlists/3070e2f782/Session
Session 2	https://www.voscreen.com/playlists/b07dfd937a/Session
Session 3	https://www.voscreen.com/playlists/77e399d3ef/Session
Session 4	https://www.voscreen.com/playlists/e8ed85fe5c/Session

Session 5	https://www.voscreen.com/playlists/178eef9416/Session
Session 6	https://www.voscreen.com/playlists/fa3d90985f/Session
Session 7	https://www.voscreen.com/playlists/a74bfbdf7f/Session
Session 8	https://www.voscreen.com/playlists/3a76793dba/Session
Session 9	https://www.voscreen.com/playlists/0ddac61733/Session
Session 10 – LIS Posttest	https://www.voscreen.com/playlists/af27ebc882/Session

6. **How to see my playlists.**
    a) Go to the upper right corner of the interface.
    b) Click the drop-down list on your name
    c) Click on my playlist.
    d) Choose the playlist corresponding to the session.

SESSION 1, MOMENT 2– TAKING THE PRETEST.

Objective: To know the entry level of the research participants concerning their listening inferential skills (LIS) before conducting the research proposal.
Instructions: Follow these steps to access and take the placement test.

a) Go to my playlists and choose " Session 1, Improving LIS pretest".
b) Watch the video clips twice and then answer the questions in the answer sheet according to what you understand. To answer the questions, take into account the following prompts.

1) Where and when do you think the scene is taking place?
2) How do you think the character(s) in the scene feel?
3) What do you think the character(s) want to achieve in the scene?
4) What do you think are the possible consequences of the character(s)' decision?
5) Why do you think the character(s) did, are doing, or will do that? What part of the video leads you to that conclusion?

c) Write your answers in front of each number, taking into consideration the aforementioned prompts.

SESSION 2

Objective: To develop listening inferential skills in terms of understanding the context, identification of emotions, inference of intentions, recognition of implications, justification of inferences, and originality through watching a wide range of video clips.
Instructions: Follow these steps to develop the activities and give your papers back at the end of the session.

a) Go to my playlists and choose " Session 2 LIS".

b) Watch the video clips at least three times and then answer the questions in the answer sheet, according to what you understand. To answer the questions, take into account the following prompts.

1) Where and when do you think the scene is taking place?
2) How do you think the character(s) in the scene feel?
3) What do you think the character(s) want to achieve in the scene?
4) What do you think are the possible consequences of the character(s)' decision?
5) Why do you think the character(s) did, are doing, or will do that? What part of the video leads you to that conclusion?

c) Write your answers in front of each number, taking into consideration the aforementioned prompts.

SESSION 10 MOMENT 1 – TAKING THE POSTTEST.

Objective: To know the exit level of the research participants concerning their listening inferential skills (LIS) after conducting the research proposal.
Instructions: Follow these steps to access and take the posttest.

a) Go to my playlists and choose " Session 10, Improving LIS Posttest".
b) Watch the video clips twice and then answer the questions in the answer sheet, according to what you understand. To answer the questions, take into account the following prompts.

1) Where and when do you think the scene is taking place?
2) How do you think the character(s) in the scene feel?
3) What do you think the character(s) want to achieve in the scene?
4) What do you think are the possible consequences of the character(s)' decision?
5) Why do you think the character(s) did, are doing, or will do that? What part of the video leads you to that conclusion?

c) Write your answers in front of each number, taking into consideration the aforementioned prompts.

Appendix F

The Survey

Final Perception Survey

Objective: To know the opinions and perceptions of the research participants concerning their listening inferential skills and the use of the application Voscreen.

Perceptions on improving Listening Inferential Skills (LIS) through Voscreen.					
Dear participant, Thank you for participating in the research project "Improving SENA learners' listening skills through the use of Voscreen: Action research on Listening Inferential Skills (LIS)." We would like to know your opinion and perceptions based on your experience. Please, take some time to answer the following questions.					
INSTRUCTIONS: Based on your personal experience in the research project, read each statement and choose the best option based on the following scale and your perception. **1 - Strongly Disagree** **2 - Disagree** **3 - Neutral** **4 - Agree** **5 - Strongly Agree**					
STATEMENTS	**SCALE**				
	1	**2**	**3**	**4**	**5**
1. Voscreen has helped me improve my ability to understand what is not explicitly said in a video clip.					
2. Voscreen exercises have allowed me to understand general and specific contexts in authentic video clips.					
3. Voscreen has helped me recognize emotions of speakers in a wide range of video clips.					

4. I consider Voscreen has allowed me to decipher the intention of speakers within real-life based video clips.					
5. I think Voscreen has helped me understand the consequences and implications of what is said in a video clip.					
6. I consider Voscreen has taught me to support my inferences with evidence from the video clips.					
7. I consider Voscreen to be a useful tool for practicing auditory inference.					
8. Voscreen exercises have helped me better understand different accents and dialects.					
9. The Voscreen interface and easy-to-use nature allow me to focus on improving my inferential skills.					
10. I believe Voscreen exercises are relevant in the development of my listening inferential skills.					
11. I like that Voscreen allows me to pause and rewind video clips to analyze them better.					
12. I believe Voscreen is a valuable tool for improving my listening inferential skills					