



## Video and audio platforms for improving listening skills in Spanish's students of EFL: A preliminary and descriptive study

Juliana Leguizamon del Portillo<sup>1</sup>, Andres Bernal-Ballen<sup>✉2</sup>

<sup>1</sup>Facultad de Educación, Universidad Antonio Nariño, Colombia

<sup>2</sup>Grupo de Investigación Conciencia, Facultad de Educación, Universidad Antonio Nariño, Colombia

### Article Info

Article History:  
Received on 15  
October 2021  
Approved on 24 July  
2022  
Published on 31 July  
2022

*Keywords:*  
*Listening ability;*  
*didactic strategy;*  
*learning English as a*  
*foreign language*

### Abstract

Learning English as a foreign language can be challenging because it requires the development of tools which allows an effective communication process. In this sense, the phonetic differences between Spanish and English are one of the reasons why it is difficult to develop listening skills for Spanish native speakers. Thus, in this research, a didactic strategy based on common audio and video platforms was designed in order to improve this ability in a sample of students. The sample was selected at convenience and consisted of fifteen students from an English intermediate course. The strategy was divided into three parts: a diagnostic test to demonstrate the level of listening; learning activities; and an exit test. A descriptive study was conducted. The obtained results showed students' progressive improvement in pragmatics, understanding, and intonation. In addition, the results indicated that the use of alternative methods, mediated by new technologies, seems to be equal or more effective than traditional teaching and a better learning of English is perceived by using remote strategies than in face-to-face ones.

✉Correspondence Address:  
Calle 22 sur # 12D-81.  
111821, Bogotá, Colombia  
E-mail: [abernal93@uan.edu.co](mailto:abernal93@uan.edu.co)

p-ISSN 2252-6706 | e-ISSN 2721-4532

## INTRODUCTION

Learning a new language involves the conjunction of many of the learner's skills (Elmetaher, 2021; Nazarieh et al., 2022; Neuner, 2020; Rosales, 2019; Shariyevna & Israilova, 2020). Three categories that affect learning have been reported: biological and psychological factors such as age, personality, and environment; cognitive factors such as intelligence, language skills, learning styles, and strategies; and affective factors such as attitudes and motivation (Hartshorne et al., 2018; Nussbaum & Bernaus, 2010). Thus, it is understood that every human being has particular characteristics, and those characteristics have notable implications in learning a foreign language (Getie, 2020; Manga, 2008).

On the other hand, students of English as a foreign language (EFL) must develop communicative skills. These skills are associated with biological and cognitive factors since the former requires an environment and a context to receive and transmit information, while the later requires listening abilities in order to engage in and develop a conversation.

The main purpose of speaking is to transmit and capture information. Communicative competence is a globalizing construct that encompasses skills, abilities, and knowledge that the language must use in order to communicate effectively (Maturana Patarroyo, 2011; Zhang & Zou, 2020). To achieve the communicative process, students must have a level for the four skills (writing, reading, speaking, and listening). By achieving that level, students are capable to communicate and express ideas. Nonetheless, listening plays an important role in the learning process (Cheung, 2010; Gilakjani & Sabouri, 2016; Jemadi et al., 2022; Karimova et al., 2020; Shariyevna & Israilova, 2020; Yavuz & Celik, 2017) and it has a positive impact on the students because they might receive information more clearly and consequently, the learning may be meaningful. The needs of the emitter are different from the needs of the receiver (Ahour & Mohseni, 2015). Similarly, the skills for each of these two subjects are different, as both may present lower proficiency in different aspects of the communicative skill.

Several causes that affect the listen ability have been reported. The uncontrollable process of the skill (speed of deliver of the message and the accent) cognitive perspective, phonological and lexical problems, syntactic and semantic problems, discorsal and pragmatic problems can be mentioned (Ozcelik et al., 2019). In fact, recently different publications have faced the listening problems (Jemadi et al., 2022; Jyoti, 2020; Nushi & Orouji, 2020). Nonetheless, one cause of unsatisfactory communicative process in the listening skill is pronunciation (Enciso et al., 2019; Orlando, 2020). It plays a very important role in the EFL learning process, and this linguistic component is key factor in achieving successful oral communication (Setter & Jenkins, 2005). Whereas English has different phonemes for graphemes, Spanish is a language that correlates the number of graphemes and phonemes (Veiga-Pérez, 2017). In Spanish, there are just 24 phonemes and 27 graphemes, while in English there are 26 graphemes and 45 phonemes. Moreover, in Spanish there are 5 vowel phonemes, while in English there are 12, which shows the wide difference in sounds between the two languages. Additionally, it has been reported that English possesses unique sounds that are not common to Romance linguistic families (Enciso et al., 2019).

In this frame, it has been observed that students distinguish these differences more easily in written than in oral communication. It stands to reason students must perform identification of phonetics differences in different contexts, enabling them to improve perceptual phonemic discrimination to the point of being able to accurately identify them as two different non-native phonetic categories (Llompert, 2021) even though speech perception may not adequately capture it (Cutler et al., 2006). This prevents learners from becoming familiar with the different sounds that can be found in the English phonetic system. Furthermore, the failure to represent pronunciation accurately and consistently is largely responsible for the constant difficulties among EFL learners (Umera-Okeke, 2008).

In order to overcome the reported problem, several publications have informed that audio-visual media are more effective for improving listening skills than other types of teaching media (Ananda et al., 2021; Asmawati & others, 2017; Damanik & Katemba, 2021; Dizon & Gayed, 2021). However, there is not much empirical evidence of the effectiveness of the use of these platforms in education (Difilippantonio-Pen, 2020; Mango, 2021). It has even mentioned that the use of audio materials in the learning listening skills seems to be inefficient (Sulaiman et al., 2019).

Considering the aforementioned reasons, the research problem is that native Spanish speakers which are EFL students have difficulties with their listening skills due to the phonetic difference between Spanish and English. Additionally, scientific literature has reported that these difficulties

with listening are due to schools' prioritization of writing, reading, and vocabulary. Listening is not part of many textbooks. Indeed, most teachers do not conduct activities to develop this skill in their classes (Gilakjani & Sabouri, 2016). Moreover, it has found that this skill does not receive enough attention and is considered a passive skill that is developed without help. However, listening is a complicated process because of the level of difficulty that requires comprehend the message as they listen to it, retain information in memory, integrate it with what follows and understand the incoming information (Elmetaher, 2021).

Although direct or indirect didactic strategies for learning listening skills have been mentioned in the scientific literature (Fetriani et al., 2020; Vančová, 2019; Yulianti, 2018), and despite the relevance of listening skills for EFL students, there is scarce reports in scientific data bases such as Scopus or Web of Sciences that Netflix Party, FlipGrid, or Randall's platforms are reported for improving listening skills in EFL. For instance, in Web of Science the combination of Netflix AND listening indicates just five results. For that reason, the research here focuses on the use of a didactic strategy based on audio and video platforms such as Netflix Party, FlipGrid, Randall's ESL Cyber Listening Lab, and Lyrics Training platforms that help improve EFL students' listening skills for Spanish native speakers.

### **Learning listening skills**

Multiple authors have defined listening skills in scientific literature (Gilakjani & Sabouri, 2016; Hwaider, 2017; Khosroshahi & Merc, n.d.; Mohammadzamani & Taki, 2018). However, current trends indicate that this skill helps to understand the world and is a necessary component of successful communication. Students spend more than 50% of their time listening during their learning process (Jafari & Hashim, 2015; Rost, 2009), which suggests that fostering listening skills is crucial in the learning process of an EFL. Furthermore, listening has been defined as the ability to understand native speakers when they speak at a normal speed. It also focuses on auditory discrimination, auditory grammar, selection of necessary information, and recall. Listening is a process of understanding what is heard and organizing it into lexical items to which meaning can be assigned.

Students listen to spoken language, divide sounds, classify them into lexical and syntactic units, and comprehend the message. This ability is a process of receiving what the speaker says, responding, and creating meaning through participation, creativity, and empathy (Gilakjani & Sabouri, 2016). It is undeniable that listening is extremely important. Conversations will only take place when one can understand what the speaker is saying, although input (listening and reading) alone is not sufficient for language acquisition. This acquisition refers to the development of appropriate responses and focuses on helping listeners develop an awareness of differences in cultural styles of listener feedback, and options for providing such feedback. Awareness of listeners' choices and strategies can increase the effectiveness and the ease with which they engage in collaborative discourse.

### **Use of video and audio for learning English**

The strategies for teaching and learning have been studied in the last decades (Davis et al., 2018; Martin et al., 2020). Nonetheless, educators as well as students do not seem to be aware of this fact, and the incorporation of new technologies in the process of teaching and learning is still under continuous development (D. Ahmadi & Reza, 2018).

Teaching and learning English is probably one of the most relevant topics in the field of education as a consequence of the ubiquitous need for preparing students with English abilities around the world. In this frame, diverse strategies have been implemented, and video or audios are commonly used by teachers during their lectures. In the current time, the incorporation of social media within education context have shown a relevant impact (Dehghanzadeh et al., 2021; Syafitri, 2021; Wang & Chen, 2020). In fact, some publications have evidenced that it is possible to improve listening skills by the incorporation strategies based on videos or audios (Polat & Eristi, 2019). For that reason, this research incorporated these kinds of material for helping students to develop intentionally listening skills.

**Teaching strategies**

A myriad of strategies and techniques are used in the process of learning a new language. Three categories for language acquisition have been described: a) the breakdown of grammatical topics; b) the development and cohesion of topics related to the teaching methods; and c) evaluative material. These three categories allow the teacher to review the points that must be present when applying a strategy in class (Neuner, 2020). However, when learning a new language, students activate learning processes that they do not usually use when learning their native language. As a result, it is necessary to propose a specific strategy during the teaching of the second language.

A didactic strategy is a series of procedures and resources used by the teacher to promote meaningful learning (Navarro & Piñeiro, 2012). This underlines the importance of these strategies in the learning process since the strategy motivates the student to learn in various ways. Similarly, a didactic strategy is a procedure that the teaching agent uses reflexively and flexibly to promote meaningful student learning. Language learning strategies are specific actions, behaviors, steps, or techniques that students use (often intentionally) to improve their foreign language skills. Teaching or learning EFL means that a didactic strategy must be specific. For instance, the didactics used in a classroom for EFL learning purposes must have attractive knowledge for students and each proposed didactic must emphasize specific knowledge (Harjanne & Tella, 2007; Shofkorov & Bagapova, 2020; Talaván, 2020; Uijens, 2004). Since second language learning should have a communicative approach, it has been reported that dialogue and classroom interaction should take up an extensive part of the class. Specific didactic strategies for learning a foreign language are classified as either direct or indirect strategies. These strategies allow students to identify different ways of learning. Table 1 shows strategies that are specifically focused on developing listening skills (Orrego & Díaz Monsalve, 2010).

Table 1. Direct and indirect strategies for learning a second language

DIRECT STRATEGIES		
Memory	Cognitive	Compensatory
Creating associations.	Understanding and reviewing	Assuming/guessing meaning.
Infering relationships.	what has been learned.	Anticipating content and meaning
Remembering.	Practicing conversations in	from the context of the subject
Rhyming.	different contexts.	matter.
Making clear mental images.	Identifying details	Seeking help.
Visualizing.	Elaborating a general idea of what	Using mimicry and gestures.
Imitating.	is read in another language.	Looking for alternative ways to
Combining images with sounds.	Summarizing.	express ideas and make use of
Making word lists.	Consulting different sources.	synonyms.
Looking up definition of new	Recognizing similarities and	
words.	differences.	
Reviewing and refreshing what	Finding patterns.	
has been learned.		
INDIRECT STRATEGIES		
Metacognitive	Affective	Social
Evaluating the process.	Seeking relaxation.	Asking for collaboration.
Learning from mistakes.	Consulting your concerns.	Allowing others to evaluate and
Being responsible for your	Making use of diaries.	correct one's own performance.
mistakes.	Encouraging self-motivation.	Asking questions.
Identifying the objectives of what	Taking risks in learning in order	Sharing information.
you are doing.	to grow beyond the routine.	Identify with whom you study
Planning learning tasks with clear		best.
goals.		Being attentive to what others
Gathering the needed materials.		feel.
Organizing study schedules.		
Making efforts to concentrate.		

The strategies to improve listening skills can be developed: before, during, and after language activities. In the first category, there are strategies focused on connection, prediction, and conversation. During listening, taking notes and listening to the material several times is recommended. As a closing activity, repeating and summarizing the material have shown positive results (Borjesson, 2012). Additionally, to favor active comprehension, cognitive, metacognitive, and

socio-affective strategies must be taken into account. For this reason, a seven-step model has been created

1. Students receive new information about the topic and type of text, then create hypotheses about the text.
2. Students listen an audio and verify their hypotheses and add new information.
3. Students work in groups to discuss and compare their results. Afterwards, they come to a consensus.
4. They listen again, review, and check what they understand and what they have not yet grasped.
5. They discuss again, highlight the most relevant aspects, and reflect on what made them understand the audio and identify key words.
6. They listen, search, and add information to verify what they have understood.
7. They discuss what helped them understand by suggesting goals, both individually and as a group.

Scientific research has found that exposing learners to authentic materials through video helps with language learning, particularly listening skills. Moreover, it has been reported that videos can be beneficial in improving L2 learners' listening skills, compared to lecture-based instruction (Metruk, 2018). Additionally, the use of podcasts to enhance listening skills has been documented as well. Moreover, most podcasts are free, diverse, readily available, and play at a normal speed, among other things (Naidionova & Ponomarenko, 2018).

Having a variety of didactic strategies does not guarantee success for a Spanish-speaking English learner. Thus, it has been mentioned that these strategies must have a communicative approach since the strategy is not only about students acquiring a certain linguistic system but also about them being able to use the linguistic system to communicate effectively (Rangel-Palencia, 2015). Several researchers have mentioned that having a communicative approach to EFL teaching strategies allows students to interact with English-speaking communities. For example, the EFL communication process is affected by EFL learners' limited vocabulary and lack of familiarity with slangs, grammatical topics, and their respective rules, the communication process is affected (S. Ahmadi et al., 2020; Hibatullah, 2019; Yagang, 1993). On the other hand, for communication in L2, the ability to listen comprehensively must be specially developed. For instance, music (Sabina & Senad, 2021), metacognitive (Valdés Mendoza, 2021), or audiovisual strategies (Collaguazo Vega, 2021) can be mentioned.

In accordance with the information above, this research proposes a strategy that favors a better way to learn a second language (English) by focusing on the use of video and audio platforms to develop listening skills. A detailed methodology to achieve these objectives has been proposed and is shown below.

## **METHODS**

The present research is focused on improving listening skills for students of ELF. In this regard, both, direct and indirect strategies (table 1) were planned and used. As can be notice in the detailed description of the process, audio interpretation, deduction, and vocabulary strategies are the main activities. It means that direct cognitive and compensatory strategies were used, as well as indirect metacognitive and affective activities were carried out.

### **Participants**

The participants for this research consist of students who hold military degrees. The students are part of the intermediate English course and have an academic load of 540 hours. Specifically, a non-representative sample selected for convenience was made up of students from group 2B of the intermediate English course, which consisted of 15 students total, 12 males and 3 females. A descriptive qualitative design was carried out.

### **Instrument design**

One instrument (Sample's perception test – Instrument 2) was designed and validated by three experts in linguistic and didactic of English as a foreign Language. Sufficiency, clarity, coherence, and relevance were assessed. Once the instrument was corrected according to the suggestions, it was

sent again to the experts for their final approval. A didactic strategy consisted of six learning guides that highlight activities to improve listening skill was developed and applied to the participants. Additionally, a diagnostic test was used, which was provided by the American Language Course (ALC).

**Instrument 1. Preconception’s test - Pretest**

The diagnostic test corresponds to the American Language Course Placement Test (ALCPT), which consists of 60 multiple-choice questions whose objective is to identify the students' listening level. These questions cover two categories: interpretation and deduction. The test made it possible to verify the students’ level of comprehension and deduction of the audio. The audio tracks had American accents, different speeds, and military vocabulary. For this test, the students had 35 minutes to listen to all the audio tracks (which have a maximum duration of one minute and thirty seconds each) and answer the stipulated question. The students answered on a multiple-choice sheet and the ALC level classification was obtained (Table 2).

Table 2. ALC level classification

Correct questions	Level
56-60	B2+
41-55	B2
31-40	B1+
21-30	B1
11-20	A2
0-10	A1

**Instrument 2. Sample’s Perception test**

Seven multiple choice questions were formulated. Each student had to indicate at what level he or she considered his or her communicative ability to be. The options for these levels were null, basic, and medium. Additionally, these three categories were established for the Common European Framework of Reference for Languages (CEFR), although without determining the specific English level. The survey was administered through Google Forms since this virtual platform allows for prompt responses from the participants. The survey was administered during class time.

**Pedagogical intervention**

The didactic strategy was designed to improve listening skills. All guides were applied remotely (one per week) over a period of six weeks. Each guide focused specifically on improving pragmatics, intonation, and accents. This strategy is explained and summarized in Table 3.

Table 3. Summary of the pedagogical strategy

Week	Activity	Platform	Duration	Characteristic
1	Vocabulary	<i>Randall’s Esl Cyber Listening Lab</i>	35 min	Audio interpretation/ Vocabulary
2	Motivation	FlipGrid/TED Talks	35 min	Deduction of audios/ Vocabulary
3	Video Friends	Netflix Party/FlipGrid	60 min	Deduction of audios/ Vocabulary
4	Vocabulary	<i>Randall’s Esl Cyber Listening Lab</i>	35 min	Audio interpretation/ Vocabulary
5	Song	Lyrics Training	35 min	Deduction of audios/ Vocabulary
6	Video Blindspot	Netflix Party/FlipGrid	80 min	Deduction of audios/ Vocabulary

The first part includes the student's knowledge of some of the platforms they worked with in class. One such platform is Randall's Esl Cyber Listening Lab, a free-to-access page that allows students to learn using podcasts on everyday topics, which utilize a variety of accents and speeds. A separate platform, Lyrics Training, is also a free-to-access page and an application that uses videos,

songs, and scenes from TV series to help students at different levels learn pronunciation, accents, and vocabulary in a more interactive way.

These platforms allow the student to have a more realistic interaction with the way English speakers express themselves in everyday contexts. For this first part of the strategy, the podcasts and songs could be repeated a maximum of three times, depending on the initial level of the students.

Within the frame of listening, there was a second activity consisted of oral production, since listening and speaking are connected skills that should be developed simultaneously. This is because listening is a much more than hearing. In fact, to be able to transfer listening to other contexts, it is necessary to evidence oral communication (Spataro & Bloch, 2018). To make oral productions, different virtual platforms were used, such as FlipGrid, a free-to-access application where audio and video recordings are made (the recordings are no longer than 90 seconds in length). This platform allows the user to play the video as many times as needed, and it is possible to make a video response to engage in a conversation between the participants. Netflix Party, on the other hand, is used to watch movies, TV series, and documentaries, allowing multiple users to watch teacher-selected media simultaneously, even when the users are in different physical locations. These platforms facilitate direct conversations between peers (classmates). Additionally, the variety of content available on Netflix Party means that there is appropriate material for each students' English level.

Finally, the assessment to test students' listening comprehension ability through understanding pronunciation and audio with neutral accents was carried out. This part consisted of two activities. The first was a weekly test where questions were characterized by pragmatics and an understanding of the general idea of each audio. A second test was carried out at the end of the course, which allowed a general review of the students' progress from the first day that the strategy was applied.

#### ***Session 1***

Students listened to audios from Randall's Esl Cyber Listening Lab. Subsequently, five questions were presented that sought to identify the students' comprehension and pragmatics of the audio.

#### ***Session 2***

A TED talk on autonomous language learning strategies was used. After that, students were asked to identify their comprehension and pragmatics of the audios. These were solved on the FlipGrid platform, which allowed the students to resolve areas of uncertainty themselves.

#### ***Session 3***

Once again, audios related to greetings and personal presentations were used from Randall's Esl Cyber Listening Lab. After listening to the audio, the students were asked five questions about its context and pragmatics, while simultaneously working with the expressions used in the audio.

#### ***Session 4***

The students were shown an episode of an American television series ("Friends") in which the main component was vocabulary about marriage. The students watched this episode simultaneously using the Netflix Party platform. Pauses were made to ask questions and identify context. These questions were answered using the FlipGrid platform.

#### ***Session 5***

A faster and more demanding audio (the song "We Don't Talk Anymore" by Carlie Puth and Selena Gomez) was used. The Lyrics Training platform was used to work on this song because this platform helps students focus on the pronunciation of native English speakers

#### ***Session 6***

An episode of a television series ("Blindspot") that uses language, codes, signs, and military slang was selected and Netflix Party platform was used. During the episode, pauses were made to facilitate questions formulation from the teacher to the students for identifying the context. These answers were answered on the FlipGrid platform.

**Instrument 1. Preconception’s test - Posttest**

A similar test to the diagnostic strategy was applied, which was also provided by the American Language Course Placement Test (ALCPT). The test consisted of 60 multiple-choice questions whose objective was to identify the students' listening level. These questions are classified into two categories, interpretation, and deduction, which made it possible to verify the students’ level of comprehension and deduction of the audios. The audios have characteristic American accents, different speeds, and military vocabulary.

**Data Analysis**

In each activity students were assessed according to the specifications of the session. The obtained values were statistically treated, and average, standard deviation and mode were obtained.

**FINDINGS AND DISCUSSION**

**Perception test**

This is a test in which the person qualifies his or her skills according to the appreciation of the level of language management (Lobo et al., 2020). Most students stated that their listening level was basic, that is, when listening different audios, they only understood certain words; four students mentioned that their listening level was medium, meaning they understood the context of the audios; and only one student stated that his listening level was null.

Next, the students selected the tools they used to improve their listening skills. The most voted answer was audios in class. Interestingly, most students work exclusively with the material provided by the teacher, although films and songs were mentioned as well. This problem (working only with materials provided by the teacher) is common in EFL students, due to pronunciation, speed, unfamiliarity with words, and limited listening abilities. Therefore, students feel more comfortable with the material worked on in class as they are appropriate for the level they exhibit (Erzad, 2020). Despite this problem, there is no evidence that teachers and students to broaden the types of aids to improve listening skills. In this sense, the use of audios and videos mediated by innovative platforms (as proposed by this strategy) can contribute to the solution to this problem.

One factor which language learning skills is the number of hours devoted to study. It is remarkable that in the sample, 12 out of 15 students did not study English for more than a year. Nonetheless it is worth mentioning that the greater the number of study hours, the better the academic outcome obtained by EFL learners (Lightbown & Spada, 2021). Thus, it is striking that the perception that students have about their listening level coincides with the results yielded by the diagnostic test, indicating that the students are aware of their level reflected in the results shown by both tests.

**Diagnostic test**

It is well known that a diagnostic test is seen as one of the most useful tools for establishing previous knowledge about any topic. In turn, performing this type of diagnostic test through some virtual platforms allows students' stress levels to drop, resulting in tests that are conducive to the development of students’ potential.

The obtained results from the ALCPT test (table 4) were a starting point to carry out and apply the designed strategy. These results show that the entry-level of the students is very low and the sample is homogeneous. This suggests that the level of listening reported by the students coincides with the level of listening achieved during the test. For this reason, it is necessary to design strategies to improve this skill. “Normal” classroom activities are not enough, and an intentional effort is required to develop and improve students’ listening abilities (Alfuatin, 2019).

Table 4. Statistical results for ALCPT as diagnostic and output test

Function	American Language Course Placement Test (ALCPT)	
	Diagnostic test (60 points)	Output test (60 points)
AVERAGE	17,6 ± 4,6	22,3 ± 3,8
MODE	13	26
MEDIAN	15	22

Several factors can influence the determination of students' initial listening level. One factor is the predisposition to the test and the result that the student may obtain. There is an internal struggle



between what the student thinks he/she knows and the test result. At the same time, it has been found that performing several tests throughout the academic process in order to strengthen, correct, and prevent various attitudes in favor of the student decreases that predisposition and favors learning (Cortés, 2020).

One of the reasons that explain the low level obtained in the diagnostic test is that students have had little contact with the language when they take the diagnostic test. In this sense, any kind of interaction (music, videos, podcast) might have a positive influence on cultural exchange and can therefore be described as a tool for achieving learning improvement (Guerrero, 2020).

**Use of Randall's ESL Cyber Listening Lab**

In this part, students were asked to answer five multiple-choice questions that focused on the interpretation of the information provided by the audio. The audio interpretation questions obtained are shown in Table 5. In these questions, the student had to extract and differentiate the information requested in the audio. The interpretation questions evaluate the comprehension and the information gathered that the student retains (for this case of the audio) whereas the students must select the pertinent and necessary information to answer appropriately. At the being of the strategy, low scores were obtained, whereas a notable improvement is visible at the end, when most of the students obtained higher scores. In this frame, it is important to mention that phonological features are considered as one of the reasons which difficult listening. The origin of this affectation can be attributed to the fact that native speakers not always articulated the words, which affect the produced sound and it is hard to understand for the listener (Hamouda, 2013). For that reason, not only repeating the audios, but the relationship between listening and correlating could be considered as an appropriate strategy for improving listening skills.

Interpretation requires a level of analysis and is based on decoding vocabulary as well as on linking the text with its context. Moreover, sociopragmatic features can be used for better understanding, such as nonverbal communication or paralinguistic aspects (Jun, 2006; Lynch & Mendelsohn, 2013; Widodo & Cirocki, 2015). Indeed, other researchers have reported that using audios have a positive impact in the overall listening skills as well as in pronunciation (Gonulal, 2020).

The analysis of the results obtained from both tests (sessions 1 and 3) showed a relevant improvement in the process of interpretation and pragmatics. This may be due to factors such as pronunciation, speed, unfamiliarity with words or terms, and limited listening. Therefore, the use of material that students feel more comfortable with is desirable (Erzad, 2020).

Table 5. Results of session 1 and 3

Students	Randall's ESL Cyber Listening Lab	
	Session 1 (5 points)	Session 3 (5 points)
AVERAGE	1,7 ± 1,4	3,5 ± 1,1
MODE	1	4
MEDIAN	1	4

**FlipGrid**

A 10-minute English video about the importance of languages was chosen, a topic related to those studied in class. It has been established that videos are useful for improving oral expression and therefore, for having a conversation, since gestures and facial expressions allow learners to connect the audible and visual part of the speech. Moreover, when audio is used without video or images, negative effects on comprehension are reported (Escudero & Kalashnikova, 2020). Orality is an influential factor in communication since is not only about the production of sounds. Oral production involves cognitive development and comprehension (Álvarez Correa, 2020).

The effectiveness of the strategy depends on how comprehensive the questions are, and for this reason, it is important to research students' level of familiarity with the platform (Dinesh & Karthikeyan, 2020). Results were much higher compared to the previous sessions since the students had had previous experiences with the platform and with the type of questions asked. Having sessions with the same methodology but different contexts generate an approach and an understanding of the process to be had by the students (Dinesh & Karthikeyan, 2020).

As can be seen in table 6, the strategy had three sessions with a similar methodology, watching a video and answering questions. Within this frame, students should be able to understand the message and respond appropriately. These videos, when played at an appropriate speed, allow students to get used to typical and/or real conversations in which repeating the audio is not an option (Escudero & Kalashnikova, 2020).

The scientific literature has reported the advantages that video could play in the listening abilities. For instance, video is an alternative instructional tool, that facilitates comprehension of pronunciation (related listening skills). Moreover, video-based utilities are more appropriate than just audios because there are multiplying inputs that the student can perceive (Djabbarova, 2020; Kaynar & Sadik, 2021; Woottipong, 2014).

Despite the lack of research using this platform, preliminary reports suggest that FlipGrid might be considered as an effective educational tool, since it develops communication skills (Mango, 2021). However, technical problems are mentioned as negative implications of its use (Innes & others, 2020). Nonetheless, it is important to mention that FlipGrid can be effective by improving listening comprehension (Guapisaca & Garzón, 2022), because it involves cognitive development (Alvarez, 2020).

Table 6. Results of session 2, 4, and 6

Students	FlipGrid		
	Session 2	Session 4	Session 6
AVERAGE	2,5 ± 0,8	4,5 ± 0,5	4,6 ± 0,5
MODE	3	4	5
MEDIAN	3	4	5

### Lyrics Training

A song with an American accent was chosen for this activity. Students listened the song and simultaneously fulfilled the Lyrics on the training platform. The maximum score for this session was 41 points. Each point corresponded to a word, which had to be selected in the corresponding order to complete the song. The result of this activity is shown in table 7. The most frequent number of correct answers for this activity was 16, which is not surprising due to the students' listening level. Even though this methodology was new to the students, the result beyond the score indicates the importance and relevance of music and how it can improve students' listening skills.

Learning a new language through songs helps to increase vocabulary since it contains authentic language, helps the student to have a socio-cultural vision of English-speaking countries, and substantially helps to correctly develop pronunciation in a more didactic and attractive way (Luque, 2020).

These activities are considered as a useful for improving listening skills. The explanation might be found in the fact that the student is able to predict the word, and if not, they can listen the audio once more (Djabbarova, 2020; Ebrahimi et al., 2021; Milan et al., 2019).

Music has been a useful element of EFL learning for students and teachers, as it allows for faster memorization of vocabulary. Some authors emphasized that the needs of today's students are different from those of past students, and as such, mixing music with technology allows the effectiveness of learning to be greater and in turn motivates students to continue learning (Al-efeshat & Baniabdelrahman, 2020).

Table 7. Results of session 5

Results	Lyrics Training
AVERAGE	22,0 ± 7,2
MODE	16
MEDIAN	23

The pedagogical use of various digital platforms can be considered as a successful strategy for strengthening the activity of listening in a second language.

The results obtained in this research have shown a remarkable improvement in the participants in this aspect. The listening skill involves the ability to understand to others when expressed at a normal speed and requires an interaction between the sender and the receiver. This activity implies a highly elaborated cognitive process, which only occurs when there is a complete understanding of the message. Thus, it is evident that the sample has been able to improve in the

comprehension of the received message, that it can interact significantly with the sender, and therefore, his or her listening ability has been enriched using the developed strategy.

### **Netflix Party**

As it was mentioned, listening has been considered as a passive learning skill. However, too much attention is needed to pay in intonation and pronunciation (Kavaliauskiene, 2008). For achieving an appropriate level of listening, the scientific literature has recently explored the use of audio and visual platforms in English teaching. In fact, it has been published that the new platforms are more effective for developing listening than other teaching media (Ananda et al., 2021).

In this research, the use of Netflix Party has shown positive results as can be seen in table 6. Likewise, the platforms allowed transforming some daily actions or activities (songs, movies, etc.) into learning strategies. The activities with videos (talks, series, or movies) using FlipGrid and Netflix Party were well received by the students, allowing them to obtain a better result in the analysis of the questions posed and in the result of their interpretation. This can be attributed to the fact that the images, expressions, and gestures allow them to understand the context of the video and relate what they were listening to what was happening in the videos.

### **CONCLUSION**

In recent years, educational sciences have understood the importance of relating research to classroom activities. For this reason, this research arises from how several authors have undertaken systematic work to achieve better learning of English as a foreign language, using information and communication technologies, mediated by research processes. In this context, this strategy demonstrated an improvement in the ability to listen to the English language, an objective set at the beginning of this research. On the other hand, as evidenced by the exit test, progress was obtained between the beginning of the strategy and the last session. This may be attributed to all the activities and platforms (the proposed strategy) that were aimed at strengthening the students' listening skills. Even though the platforms were different, they had a specific purpose: to improve the student's listening skills.

It is important to highlight the great variety of pedagogical and didactic resources that can be applied in classes to work on listening skills. It should be emphasized that listening is a process and a skill that should be worked on frequently in order to achieve a notable improvement in students. The activities with videos (lectures, series, or movies) were well received by the students, allowing them to obtain a better result in the analysis of the posed questions and in the result of their interpretation, thanks to the fact that the images, expressions, and gestures allow them to understand the context of the video and connect what they were listening to with what was happening in the videos. Songs are useful tools that attract and capture the students' attention.

With this strategy, positive results were obtained because an improvement in the students' listening skills was evidenced, thanks to the platforms, which were chosen thinking about the use of the tools they provided, the ease of acquisition, and their use. Likewise, the platforms allowed some daily actions or activities (songs, movies, etc.) to be transformed into learning strategies.

It is pertinent to highlight that as a consequence of the didactic strategy in this research, a significant improvement was demonstrated by the students of in the sample, as indicated by the results obtained in the entrance and exit tests. This can be interpreted to mean that, during the research process, listening skills improved, which indicates that students can perform better when they need to use the language in everyday contexts, which is the main objective of English teaching.

### **FUNDING STATEMENT**

This research received no specific grant from any funding agency.

### **REFERENCES**

- Ahmadi, D., & Reza, M. (2018). The use of technology in English language learning: A literature review. *International Journal of Research in English Education*, 3(2), 115–125.
- Ahmadi, S., Keshmirshakan, M. H., & others. (2020). Listening comprehensions problems and strategies used by intermediate EFL learners. *Journal of English Literature and Cultural Studies*, 1(3), 15–25.

- Ahour, T., & Mohseni, F. (2015). Investigating EFL learners' perception of needs: necessities, wants, and lacks in different language skills taught in general English courses. *Modern Journal of Language Teaching Methods*, 5(1), 236.
- Al-efeshat, H., & Baniabdelrahman, A. (2020). The EFL Teachers' and Students' Attitudes towards the Use of Songs in Learning English. *International Online Journal of Education and Teaching*, 7(3), 844–858.
- Alfuatin, L. (2019). Language Learning Strategies Used by Students with Different Listening Achievement. *ELT Forum: Journal of English Language Teaching*, 8(2), 120–127.
- Álvarez Correa, A. L. (2020). *Transformación de la práctica de enseñanza para fortalecer el desarrollo de habilidades comunicativas orales en estudiantes de grado transición del colegio Kimy Pernia Domicó*. Universidad de La Sabana.
- Ananda, R. D. P., Saiful, S., & Muhsin, M. A. (2021). A Comparison Study Using Netflix and Joox in Listening Comprehension for Senior High Students. *Ethical Lingua: Journal of Language Teaching and Literature*, 8(2), 526–535.
- Asmawati, A., & others. (2017). Analyzing students' difficulties toward listening comprehension. *ETERNAL (English, Teaching, Learning, and Research Journal)*, 3(2), 211–228.
- Borjesson, L. (2012). Om strategier i engelska och moderna språk. *Institutionen for Pedagogik Och Specialpedagogik, Goteborgs Universitet*.
- Cheung, Y. K. (2010). The Importance of Teaching Listening in the EFL Classroom. *Online Submission*.
- Collaguazo Vega, W. P. (2021). *Audiovisual didactic resources to boost A1 students' discriminative listening skills*. Pontificia Universidad Católica del Ecuador.
- Cortés, K. (2020). *Elaboración y validación de un instrumento de evaluación diagnóstica para medir las actitudes hacia el aprendizaje del idioma inglés en estudiantes de octavo año de enseñanza básica*. Pontificia Universidad Católica de Chile.
- Cutler, A., Weber, A., & Otake, T. (2006). Asymmetric mapping from phonetic to lexical representations in second-language listening. *Journal of Phonetics*, 34(2), 269–284.
- Damanik, I. J., & Katemba, C. V. (2021). Netflix as a Digital EFL Learning Aid for Vocabulary Improvement: College Students' Perspective. *ETERNAL (English, Teaching, Learning, and Research Journal)*, 7(2), 442–455.
- Davis, D., Chen, G., Hauff, C., & Houben, G.-J. (2018). Activating learning at scale: A review of innovations in online learning strategies. *Computers & Education*, 125, 327–344.
- Dehghanzadeh, H., Fardanesh, H., Hatami, J., Talaei, E., & Noroozi, O. (2021). Using gamification to support learning English as a second language: a systematic review. *Computer Assisted Language Learning*, 34(7), 934–957.
- Difilippantonio-Pen, A. (2020). *Flipgrid and second language acquisition using Flipgrid to promote speaking skills for English language learners*.
- Dinesh, P., & Karthikeyan, J. (2020). Developing Listening and Speaking Skills Using Information and Communication Technology Tools. *Journal of English Language Teachers' Interaction Forum*, 11, 34.
- Dizon, G., & Gayed, J. M. (2021). An exploratory study on the use of interactive video via Netflix to improve second language aural vocabulary learning. *AsiaCALL Online Journal*, 12(5), 100–113.
- Djabborova, F. O. (2020). Ways of developing listening skills of English learners in ESL and EFL classroom. *European Journal of Research and Reflection in Educational Sciences*, 8(10), 212–216.
- Djabbarova, F. O. (2020). Modern methods of teaching listening skills. *Science and Education*, 1(Special Issue 2), 67–71.
- Ebrahimi, F., Elahifar, M., & others. (2021). Teaching Speaking and Listening Skills through Audio-Lingual Versus Conventional Methods of Instruction: Which Method Is More Effective? *International Journal of Linguistics, Literature and Translation*, 4(11), 72–81.
- Elmetaher, H. (2021). Developing English Listening Skills: Can Active Learning Help?. *MEXTESOL Journal*, 45(3), n3.
- Enciso, O. L. U., Hernandez, S. S. F., Pita, K. L. V., & Pabón, A. S. R. (2019). Problematic Phonemes for Spanish-speakers' Learners of English. *Gist: Education and Learning Research Journal*, 19, 215–238.
- Erzad, A. M. (2020). Exploring English listening problems among EFL students at Iain Kudus. *Edulingua: Jurnal Linguistiks Terapan Dan Pendidikan Bahasa Inggris*, 7(1).

- Escudero, P., & Kalashnikova, M. (2020). Infants use phonetic detail in speech perception and word learning when detail is easy to perceive. *Journal of Experimental Child Psychology*, 190, 104714.
- Fetriani, F., Baluqiah, K., & Fransiska, M. (2020). Listening Comprehension Strategies Employed by Indonesian EFL Students: Lesson Learned From Indonesian Islamic Higher Education. *Research and Innovation in Language Learning*, 3(1), 40–48.
- Getie, A. S. (2020). Factors affecting the attitudes of students towards learning English as a foreign language. *Cogent Education*, 7(1), 1738184.
- Gilakjani, A. P., & Sabouri, N. B. (2016). Learners' Listening Comprehension Difficulties in English Language Learning: A Literature Review. *English Language Teaching*, 9(6), 123–133.
- Gonulal, T. (2020). Improving listening skills with extensive listening using podcasts and vodcasts. *International Journal of Contemporary Educational Research*, 7(1), 311–320.
- Guapisaca, M. M. F., & Garzón, A. L. A. (2022). Oral skills and Flipgrid platform in english as a foreign language learners. *Revista Arbitrada Interdisciplinaria Koinonia*, 7(1), 46–64.
- Guerrero, L. T. T. (2020). Fortalecimiento de las habilidades comunicativas en inglés en estudiantes de primaria a través de una intervención pedagógica mediada por TIC.(Original). *Roca. Revista Científico-Educacional de La Provincia Granma*, 16, 1–15.
- Hamouda, A. (2013). An investigation of listening comprehension problems encountered by Saudi students in the EL listening classroom. *International Journal of Academic Research in Progressive Education and Development*, 2(2), 113–155.
- Harjanne, P., & Tella, S. (2007). Foreign language didactics, foreign language teaching and transdisciplinary affordances. *Foreign Languages and Multicultural Perspectives in the European Context*, 197–225.
- Hartshorne, J. K., Tenenbaum, J. B., & Pinker, S. (2018). A critical period for second language acquisition: Evidence from 2/3 million English speakers. *Cognition*, 177, 263–277.
- Hibatullah, O. F. (2019). The Challenges of international EFL students to learn English in a non-English speaking country. *Journal of Foreign Language Teaching & Learning*, 4(2), 88–105.
- Hwaider, S. (2017). Problems of teaching the listening skill to Yemeni EFL learners. *International Journal of Scientific and Research Publications*, 7(6), 140–148.
- Innes, A., & others. (2020). Student Evaluation of Flipgrid at a Japanese University: Embarrassment and Connection. *Lublin Studies in Modern Languages and Literature*, 44(3), 151–166.
- Jafari, K., & Hashim, F. (2015). Comparison of normal and moderately slow speech rates: listening to students' voices in listening comprehension classes in EFL context. *International Journal of Foreign Language Teaching in the Islamic World*, 3(3), 5–11.
- Jemadi, F., Su, Y. R., & others. (2022). Capturing The Efl Students' Listening Comprehension Problems. *English Language Education Journal (ELEJ)*, 1(1), 11–22.
- Jun, Y. U. (2006). Context and Text Interpretation in Listening English. *Journal of Zhejiang Ocean University (Humanities Sciences)*, 1.
- Jyoti, R. (2020). Exploring English Language Students' Difficulties in Listening Comprehension. *Journal La Edusci*, 1(3), 1–10.
- Karimova, M., Usmonova, K., Thashkulova, Z., Imamov, N., & others. (2020). Importance Of Listening Skill In Learning English. *International Journal on Integrated Education*, 3(12), 400–402.
- Kavaliauskiene, G. (2008). Podcasting: A tool for improving listening skills. *Teaching English with Technology*, 8(4).
- Kaynar, N., & Sadik, O. (2021). The Effects of Authentic and Interactive Video Tasks on Students' Extra Listening Practices. *Journal of Theoretical Educational Science*, 14(3), 291–307.
- Khosroshahi, H. H., & Merc, A. (n.d.). *Listening self-efficacy beliefs, L2 listening proficiency, and listening strategy training*.
- Lightbown, P. M., & Spada, N. (2021). *How Languages Are Learned 5th Edition*. Oxford university press.
- Llompert, M. (2021). Phonetic categorization ability and vocabulary size contribute to the encoding of difficult second-language phonological contrasts into the lexicon. *Bilingualism: Language and Cognition*, 24(3), 481–496.
- Lobo, Z., Ibrahim, O., & Al Jadaan, O. (2020). A Comparative Study of Placement Test (PT), Proficiency Scores (PRS) and Students' Self Perception of English Language Skills in A University in United Arab Emirates. *European Journal of English Language and Literature Studies*, 8(5), 29–41.

- Luque, P. A. (2020). Fundamentos para potenciar el proceso de aprendizaje del idioma inglés a través de la música. *ReHuSo: Revista de Ciencias Humanísticas y Sociales*, 5(1), 33–41.
- Lynch, T., & Mendelsohn, D. (2013). Listening. In *An introduction to applied linguistics* (pp. 190–206). Routledge.
- Manga, A. M. (2008). Lengua segunda (L2) Lengua extranjera (LE): Factores e incidencias de enseñanza/aprendizaje. *Tonos Digital*, 16(0).
- Mango, O. (2021). Flipgrid: Students' Perceptions of Its Advantages and Disadvantages in the Language Classroom. *International Journal of Technology in Education and Science*, 5(3), 277–287.
- Martin, F., Sun, T., & Westine, C. D. (2020). A systematic review of research on online teaching and learning from 2009 to 2018. *Computers & Education*, 159, 104009.
- Maturana Patarroyo, L. M. (2011). La enseñanza del inglés en tiempos del plan nacional de bilingüismo en algunas instituciones públicas: Factores lingüísticos y pedagógicos. *Colombian Applied Linguistics Journal*, 13(2), 74–87.
- Metruk, R. (2018). Extensive listening practice of EFL learners with authentic English videos. *Teaching English with Technology*, 16(4), 3–19.
- Milan, P. B., Amini, N., Joghataei, M. T., Ebrahimi, L., Amoupour, M., Sarveazad, A., Kargozar, S., & Mozafari, M. (2019). Decellularized human amniotic membrane: From animal models to clinical trials. *Methods*. <https://doi.org/10.1016/j.ymeth.2019.07.018>
- Mohammadzamani, M., & Taki, S. (2018). Developing Listening Skills through Input, Interaction and Output: Iranian EFL learners in Focus. *Journal of Applied Linguistics and Language Research*, 5(1), 90–99.
- Naidionova, A. V., & Ponomarenko, O. G. (2018). Use of podcasting technology to develop students' listening skills. *Інформаційні Технології і Засоби Навчання*, 63, № 1, 177–185.
- Navarro, D., & Piñeiro, M. (2012). Didactic strategies for teaching English as a foreign language in seventh and eight grades in secondary schools in Costa Rica. *Revista Kañina*, 36(2), 233–251.
- Nazarieh, M., Razmi, M. H., Azizian, M., & Ghani, M. U. (2022). A Brief History of Listening Comprehension in Second Language Teaching and Learning. *Education Research International*, 2022.
- Neuner, C. (2020). *Number Talks for Multilingual Learners*.
- Nushi, M., & Orouji, F. (2020). Investigating EFL teachers' views on listening difficulties among their learners: The case of Iranian context. *Sage Open*, 10(2), 2158244020917393.
- Nussbaum, L., & Bernaus, M. (2010). *Didáctica de las lenguas extranjeras en la educación secundaria*. Síntesis.
- Orlando, M. E. (2020). Teaching Pronunciation to Adult Speakers of Spanish in Business English Lessons: Two Aspects to Consider. *MEXTESOL Journal*, 44(3), n3.
- Orrego, L. M., & Díaz Monsalve, A. E. (2010). Empleo de estrategias de aprendizaje de lenguas extranjeras: inglés y francés. *Íkala, Revista de Lenguaje y Cultura*, 15(24), 105–142.
- Ozcelik, H. N., den Branden, K., & Van Steendam, E. (2019). Listening comprehension problems of FL learners in a peer interactive, self-regulated listening task. *International Journal of Listening*, 1–14.
- Polat, M., & Eristi, B. (2019). The Effects of Authentic Video Materials on Foreign Language Listening Skill Development and Listening Anxiety at Different Levels of English Proficiency. *International Journal of Contemporary Educational Research*, 6(1), 135–154.
- Rangel-Palencia, R. L. (2015). Estrategias pedagógicas para el aprendizaje del inglés con el uso de la herramienta Rosseta Stone. *Quaestiones Disputatae: Temas En Debate*, 8(16).
- Rosales, A. S. (2019). Vocabulary Acquisition (Incidental) through Watching Subtitled Video Material. *ELT Forum: Journal of English Language Teaching*, 8(2), 190–197.
- Rost, M. (2009). *Teacher development interactive: Listening*. White Plains, NY: Pearson Longman.
- Sabina, V., & Senad, K. (2021). Cognitive-Emotional Music Listening Paradigm in Professional Music Education. *International Journal of Cognitive Research in Science, Engineering and Education*, 9(1), 135–145.
- Setter, J., & Jenkins, J. (2005). State-of-the-art review article. *Language Teaching*, 38(1), 1–17.
- Shariyevna, K., & Israilova, A. (2020). The Importance Of Listening In Foreign Language Learning. *The American Journal of Social Science and Education Innovations*, 2, 643–646.
- Shofkorov, A. M., & Bagapova, G. V. (2020). Language teaching-improving foreign language pronunciation relating to native language. *European Journal of Research and Reflection in Educational Sciences*, 8(11), 166–170.

- Spataro, S. E., & Bloch, J. (2018). "Can you repeat that?" Teaching active listening in management education. *Journal of Management Education*, 42(2), 168–198.
- Sulaiman, N., Ganapathy, N. N. D. F., & Ismayatim, W. F. A. (2019). Pocket E-Li: Listening Assessments Made Easy. *International Journal of Modern*, 34.
- Syafitri, W. (2021). Can Video Motivate Students in Learning English During New Normal Era? *Proceeding of International Conference on Language Pedagogy (ICOLP)*, 1(1), 235–239.
- Talaván, N. (2020). The didactic value of AVT in foreign language education. In *The Palgrave handbook of audiovisual translation and media accessibility* (pp. 567–591). Springer.
- Uljens, M. (2004). *School didactics and learning: A school didactic model framing an analysis of pedagogical implications of learning theory*. Psychology Press.
- Umera-Okeke, N. (2008). Spelling and phonetic inconsistencies in English: A problem for learners of English as a foreign/second language. *African Research Review*, 2(1), 64–83.
- Valdés Mendoza, M. F. (2021). *Implementation of metacognitive strategies for the development of the listening comprehension skill in an EFL classroom*. Facultad de Artes y Humanidades.
- Vančová, H. (2019). Current issues in pronunciation teaching to non-native learners of English. *Journal of Language and Cultural Education*, 7(2), 140–155.
- Veiga-Pérez, C. (2017). Spanish Teenager's Pronunciation of English as a Second Language. *Revista de Educación de La Universidad de Granada*, 24, 273–292.
- Wang, H., & Chen, C. W. (2020). Learning English from YouTubers: English L2 learners' self-regulated language learning on YouTube. *Innovation in Language Learning and Teaching*, 14(4), 333–346.
- Widodo, H. P., & Cirocki, A. (2015). Video-mediated listening tasks in the EAL classroom: A sociopragmatic perspective. *The Asian EFL Journal*, 81(4), 62–90.
- Woottipong, K. (2014). Effect of using video materials in the teaching of listening skills for university students. *International Journal of Linguistics*, 6(4), 200.
- Yagang, F. (1993). Listening: Problems and solutions. *English Teaching Forum*, 31(2), 16–19.
- Yavuz, F., & Celik, O. (2017). The importance of listening in communication. *Global Journal of Psychology Research: New Trends and Issues*, 7(1), 8–11.
- Yulianti, D. B. (2018). Learning strategies applied by the students in writing English text. *Journal on English as a Foreign Language*, 8(1), 19–38.
- Zhang, R., & Zou, D. (2020). Types, purposes, and effectiveness of state-of-the-art technologies for second and foreign language learning. *Computer Assisted Language Learning*, 1–47.