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Cognitive Skills Exercises in Preliminary Interpreter Training

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Dedication

To Alaaeddine, my husband and my anchor

This journey wouldn’t have been possible without your unwavering and unconditional support. Thank you for your endless patience, your reassuring words, and for always grounding me when I felt adrift.

Your love and steadfast presence have been my greatest source of strength and comfort every step of the way.

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Abstract

This study investigates the impact of cognitive skill training on interpreter performance, focusing on active listening, working memory, and public speaking. Grounded in cognitive theories of interpreting, the research adopts a process-oriented approach to interpreter training. A quasi-experimental design was implemented at the Translation Institute of Oran, where a 7-week training module integrated targeted exercises to enhance cognitive skills. Pre-test and post-test assessments using consecutive interpreting tasks measured participants' performance, evaluated through a tailored assessment rubric. Statistical analyses revealed significant improvements, supported by qualitative feedback from a post-experiment questionnaire. Findings suggest that cognitive training enhances interpreters' retention, reformulation accuracy, and delivery fluency. The study underscores the pedagogical value of integrating cognitive skill-building exercises in interpreter education while acknowledging limitations related to sample size and participant variability.

Keywords: interpreter training, cognitive skills, active listening, working memory, public speaking, quasi-experiment.

الملخص

تهدف هذه الدراسة إلى تقصي أثر تدريب المهارات المعرفية على أداء الترجمان، مع التركيز على مهارات الاستماع الفعال، والذاكرة العاملة، والإلقاء. تستند الدراسة إلى النظريات المعرفية في الترجمة الفورية، مع اعتماد مقاربة قائمة على العمليات، حيث تم إجراء دراسة شبه تجريبية تمثّلت في تطبيق برنامج تدريبي تضمّن تمارين موجّهة لتنمية المهارات المعرفية، وذلك على مدى سبعة أسابيع بمعهد الترجمة بوهران .تم تقييم أداء المشاركين من خلال اختبارات قبلية وبعدية في الترجمة التتابعية، بالاستناد إلى شبكة تقييم أُعدّت خصيصًا لهذه الدراسة. كشفت نتائج التحليل الإحصائي عن تحسّن ملحوظ في مستوى الأداء، تدعمه المعطيات النوعية المستقاة من استجابات الطلبة في الاستبيان المقدّم بعد التجربة. وتشير النتائج إلى أن التدريب المعرفي يسهم في تعزيز القدرة على الاحتفاظ بالمعلومات، وتحسين دقة إعادة الصياغة وطلاقة الإلقاء. تخلص الدراسة إلى التأكيد على الأهمّية البيداغوجية لإدماج تمارين تنمية المهارات المعرفية ضمن برامج تكوين الترجمان، مع الإشارة إلى بعض القيود المرتبطة بحجم العينة وخصائصها.

الكلمات المفتاحية: تكوين الترجمان، المهارات المعرفية، الاستماع الفعال، الذاكرة العاملة، الإلقاء، دراسة شبه تجريبية.

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List of Abbreviations

AL	Active Listening
CI	Consecutive Interpreting
Ems	Effort Models
ESIT	Ecole Supérieure d'Interprètes et de Traducteurs
ITT	The Interpretive Theory of Translation
LC	Linguistic Competence
MCIL	Master à Cursus Intégré de Licence
PS	Public Speaking
RP	Reflective Practice
SI	Simultaneous Interpreting
SL	Source Language
TL	Target Language
WM	Working Memory

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General Introduction

In recent decades, the field of translation and interpreting has undergone significant transformation, driven by the integration of insights from a wide range of academic disciplines. This collaboration between Translation and Interpreting Studies and various other scientific fields has led to the development of multidisciplinary approaches to teaching translation and interpreting. As researchers and scholars explored theories from different disciplines—such as psychology, cognitive science, psycholinguistics, and even neuroscience—new possibilities emerged for incorporating innovative and systematic teaching methodologies into translation and interpreting education.

Interpreting studies, a fairly recent and still developing research area, is still in the process of exploring how to best make use of this multidisciplinarity, especially in relation to teaching and educational approaches. Following the end of World War II, conference interpreting emerged as a distinct profession. This development gave rise to interpreting didactics, which had to quickly evolve in order to meet the growing demands for skilled language mediators, who possessed enough skill and know-how to facilitate the nearly impossible task of establishing effective communication between completely different worlds. *How do you achieve that?* It must have come to any observer's mind watching the interpreter excelling at his craft to ask this particular question. It is by no means an easy task, to have two separate thought-worlds depend on your sole ability to bridge the gap between them and bring them close to one another. Interpreting scholars have always pursued this question, and in their pursuit, drew from every possible scientific corner in order to understand what makes interpreting possible. According to recent findings, the answers may very well reside within Cognitive Psychology.

The issue of interpreter training has been raised since the establishment of the profession itself. To get a highly-skilled interpreter, you had to train one. Thus began the quest to identify the most effective methods for developing structured and impactful approaches to interpreter training. Traditional approaches relied on the transmission of knowledge rooted in the practical experience of early conference interpreting pioneers, such as Jean Herbert and Danica Seleskovitch. Researchers soon realized the need for a more systematic, standardized and evidence-based approach that complies with scientific standards and meets professional requirements and demands. Hence, Interpreting Studies emerged, encompassing various specialized research areas, each focusing on particular aspects of the interpreting practice. Process-oriented interpreting studies, the main interest in this research, is the sub-area involved with exploring the interpreting process, and more specifically what happens inside the interpreter's mind, enabling him to perform such a complex and almost impossible feat. This research area has particularly devoted a large amount of scientific research dedicated to interpreter training, informed by the latest theories on cognition and cognitive psychology.

The problem is that although the significant implications of cognitive studies for interpreter training have been widely discussed, not enough emphasis was put towards developing practical methods to effectively implement these theoretical frameworks, except for a few distinct efforts by practisearchers like Daniel Gile, Robin Setton and Andrew Dawrant. There has been a growing demand for the implementation of cognitive approaches to interpreting education, yet not enough attention has been given to the practical strategies needed to effectively achieve this goal.

The present work aims to investigate methods for integrating a cognitive approach in interpreting education and exploring the impact it has on interpreting trainees' performances, especially when implemented at the early

stages of training. It also aims to explore where Algeria stands in relation to the adoption and implementation of these modern methodologies. The aim is twofold: first, to evaluate the current state of interpreting programs implemented in Algeria, using the Translation Institute of Oran as a case in point, and second, to propose a practical framework for applying a process-oriented methodology in interpreter training, informed by cognitive approaches. To guide the research, two primary research questions were formulated:

1. To what extent is a cognitive training approach incorporated into Algerian interpreting programs?
2. What impact does a cognitive approach have on trainees' interpreting performance?

Regarding the first research question, and based on prior experience and observations, this study hypothesizes the following:

- H1: Cognitive training is minimally or not at all incorporated into Algerian interpreting programs.

For the second research question, it hypothesizes that:

- H2: Implementing a systematic cognitive training methodology will lead to a significant improvement in trainees' interpreting performance.

This endeavor is not without its challenges, including the difficulty of addressing every facet of the topic, securing ideal conditions and resources for the investigation, and relying on the limited data available to inform our experimentation. Nevertheless, the findings of this study hold the potential to make valuable contributions to the field. To accomplish this, a thorough and multifaceted research methodology that integrates both observational and experimental research designs must be employed. This approach will use a combination of quantitative and qualitative data collection methods, supported by tools developed specifically for this study. By implementing this approach, a comprehensive overview of the current interpreting teaching methods in the

Algerian context will be provided, including the role of cognitive training. Additionally, a method for integrating a cognitive teaching approach, as suggested in the body of literature, will have been piloted.

This thesis is structured into five chapters, divided into two main parts: the theoretical framework and the investigative research. The first two chapters establish the theoretical foundation of the study, while the subsequent three chapters present the research conducted to address the main research questions.

Chapter one, titled *Interpreting and Cognition*, introduces interpreting as a cognitive process, highlighting the complex and interwoven set of mental operations involved. It examines the cognitive demands placed on interpreters, caused by the interaction between mental processes such as attention, memory, and problem-solving. The discussion is grounded in cognitive theories relevant to interpreting studies.

Chapter two, titled *Process-oriented Interpreter Training*, explores interpreter training from the perspective of process-oriented interpreting research. It reviews pedagogical approaches that emphasize cognitive skill development, focusing on how training can enhance interpreter's mental processing abilities.

Together, Chapters 1 and 2 form the theoretical framework upon which this research is based.

Chapter three, titled *Investigating the Incorporation of Cognitive Training in Algerian Interpreting Programs – an Exploratory Study*, outlines the observational research conducted to explore the extent to which cognitive training is incorporated into Algerian interpreting programs. Through qualitative and descriptive analysis, it examines current training practices, identifying potential gaps and areas for improvement.

Chapter four, titled *Investigating the Impact of Cognitive Skills Training on Students' Interpreting Performance*, presents the experimental research design used to assess the impact of cognitive skills training on trainees' interpreting performance. It details the quasi-experimental methodology, including participant selection, training interventions, and assessment criteria.

Chapter five, titled *Data Analysis, Results, and Discussion*, analyzes and interprets the data collected from the experimental study. It examines the effects of cognitive training by comparing the pre-test and post-test results, discussing key findings in relation to existing literature. The chapter also addresses study limitations, implications for interpreter training, and potential directions for future research.

Together, Chapters 3, 4, and 5 encompass the investigative work conducted to answer the study's main research questions.

Chapter One:

Interpreting and Cognition

1 Introduction

Translation is a human activity as old as human communication, as ancient manuscripts testify to the existence of translation practices, whether written or oral, throughout the distant history as a tool to erase the linguistic and intellectual differences between peoples and civilizations.

Oral translation, or interpreting as we will refer to henceforth, has existed naturally and spontaneously as a means of communication between humans ever since they existed and came into contact with one another, that is, ages before man invented writing, and subsequently, written translation (Pöchhacker, 2004).Researchers and historians of translation agree that the oral form of translation has existed long before the written one, although documents and evidence to support this are scarce. This is partly due to the ephemeral nature of the oral rendition of discourse, unlike written texts which could be traced and their existence confirmed.

Interpreting is said to be "one of the oldest activities known to man; it has existed ever since two mutually unintelligible languages met" (Viaggio, 1996, p.591).It is therefore safe to assume that interpreters existed throughout different times and in different places where more than one language system existed or came into contact.Across time, interacting individuals and societies called upon mediators who could facilitate communication, and these were givendifferent names and titles across various cultures: **turgumânu** in Assyria and Babylonia, **tardjumân** among the Arabs (from whence comes "**trucheman**" in French), **tilmatch** among the Turks, (from whence comes **tolmatch** in Russian and **Dolmetscher** in German), and **interpres** in Latin (from whence comes **interprète** in French and **interpreter** in English) (Van Hoof, 1996).

When researching translation and interpreting history, one also stumbles upon the term 'Dragoman', which in ancient Mediterranean societies (Arabic, Turkish, Persian, Greek…), denoted an official translator or interpreter serving as a liaison between rulers and their people, and could also refer to officials facilitating interactions between empires and powers in sensitive domains such as politics, diplomacy and trade (Rothman, 2015).

Translator and *interpreter* are sometimes used interchangeably, seeing as they fundamentally serve the same purpose of the **translational activity**; i.e. transferring the message from one language to another. There are several key distinctions between the two however, the most obvious being that while the translator's job is to reproduce the original text in another language for a client or an unspecified reader, the interpreter is "more centrally part of a two-way process of communication between an utterer and an immediate and known audience" (Laster & Taylor, 1994, p.157). This *immediacy* -and not orality, as is often conventionally agreed upon- is what distinguishes interpreting from other forms of translation (Pöchhacker, 2004, p.10). Thus, when talking about the interpreter and interpreting in this research, we specifically mean this definition of the mediator and the complex process of immediately transferring the message among known parties from and to multiple languages, including sign languages.

This chapter aims to explore interpreting not as a profession, but as a complex mental activity. It explores the different elements that allow interpreters to perform a seemingly impossible task and the various cognitive aspects of it. It also explores the contribution of cognitive psychology to process-oriented interpreting research and the models and theories that emerged with this overlap.

1.1 Interpreting as a mental activity

Before any attempt to define interpreting or describe its underlying processes, it is very important to begin with an understanding that finding answers cannot be done in isolation. Interpreting is a highly complex human activity which involves a great number of processes, concepts and human aspects that it is impossible to dive into it without being equipped with tools from a large selection of scientific fields such as linguistics, human communication and cognitive psychology.

As mentioned above, translation and interpreting are sometimes used to refer to one profession. When it comes to the process, however, scholars and practitioners stress on the importance of distinguishing between the acts of translating and interpreting when conducting research. In addition to the *immediacy* of the act, interpreting is based on the interpreters' attempt to understand and derive meaning from the speech regardless of the linguistic structure, by relying on "cognitive memory that does not retain the fleeting passage of the phonemic, semantic or syntactic structures" as in written translation (Seleskovitch, 1978, p.333). Its ultimate goal then is to render meaning in order to establish communication in any way possible, which Lederer (1978) considers a primary precept to studying interpreting as a process. In order to understand why this makes interpreting more complex and difficult to execute, it is necessary to describe the relationship between language, meaning and communication first.

1.1.1 Language, meaning and communication

Human language is a highly complex system. In order to understand it, numerous theories were and continue to be developed as part of what is commonly known as Linguistics, or "the scientific study of human natural language" (Akmajian et al., 2010, p.5). Its primary focus is to observe and

describe the structural elements of language, and how these elements (such as phonology, morphology and syntax) can be used to serve different functions. Linguistics, however, does not study language in isolation. It also views it in its social and cultural contexts and examines how individuals use it. The branch of linguistics concerned with this is Pragmatics. When one person addresses another, words and sentences are put together in order to convey a message that is then received, processed and hopefully understood. Chomsky (2006) calls this basic and natural use of language "a creative activity" which we are still unable to fully grasp, wherein a speaker of a given language has the ability to comprehend an unlimited number of expressions that are completely new to him, reuse them in their appropriate context, and be understood by others on the receiving end through the same process (p.88). This is to say that we ought to look beyond the linguistic aspect of language and emphasize the importance and relevance of the cognitive and extra-linguistic features of language when studying communication in this context. This is what Seleskovitch and Lederer (1989) emphasized in their work when applying a psycholinguistic approach to translation and interpreting research, which produced the Interpretive or the 'sense' theory.

This leads us to the second concept in this triad, *meaning*. The relationship between language and meaning is quite intricate and multifaceted. On the one hand, meaning is embedded in language and is the internal function of language, while on the other hand, it also is made up of and requires languages in order to exist and be expressed (Martínez del Castillo, 2015). When we talk about language and meaning, or *sense*, in this context, we do not refer to the debates about the association between sound and meaning (signifier-signified) or linguistic meaning (semantics). That is a primarily linguistic concern. Our view of the matter is rather cognitive and sociolinguistic, and seeks to understand meaning in the sense of thoughts, ideas and concepts. This is more in line with

pragmatics, which takes into consideration other factors such as context and the user of the language. In his *Muqaddimah*, Ibn Khaldûn refers to language as "the expression by a speaker of his intention" (Rosenthal, 2005, p.434), meaning that language is a tool and a means by which the speaker of the language expresses his opinions, feelings and needs. Not only that, he further adds that this expression is "an act of the tongue which originates in an intention to convey the meaning of speech"(p.434), which also implies that man resorts to the use of human language in order to communicate with those around him and intends, through speech, to export and convey his ideas to the external world.

Communication, the third concept, is the process through which individuals and peoples interact, establish relationships and share different views, values and cultures –in other words, exchange *meanings*. This process relies on language as the primary medium through which meaning is visualized, constructed and communicated. Communication, as a process, is not merely a transmission of words. It is a collaborative process which involves the negotiation of meaning between interlocutors. This is especially true for interpreting as a communicative activity, as "interpreting is always negotiation of meaning" (Kadrić et al., 2022, pp.76-77).

From the above, we can clearly make two distinct facets of language: an internal and an external purpose. Martínez del Castello (2015) makes this distinction clear and explains that the internal purpose of language is to create meanings coming from a speaker's mind who wishes to transfer knowledge in a given situation, while the external purpose is the actual use of language for communication. We believe these two elements must be well-understood and acquired by the interpreter, who has to understand a speech and the thoughts in the minds of the speakers, as well as their intentions for and methods of communicating them with others. It therefore becomes clear to us that language is far from being a system of signs and symbols, but rather a broad and complex

system that requires deep knowledge. This is why much emphasis is put on this matter in interpreting research. It shows what is expected of an interpreter and how all of those facets must be taken into consideration when becoming a mediator between individuals and peoples.

1.1.2 Interpreting to establish communication

The first and foremost aim of any interpreting action is to establish communication. That is the primary and most important reason for the existence of the practice. An interpreter is commissioned for the purpose of allowing two or more people to communicate and understand one another. In this context, ideas, emotions and thoughts are expressed. These are communicated via language, with all of its verbal and non-verbal aspects.

Now is it enough to speak a language in order to communicate in it? Naturally, it is not. We have already demonstrated that language is more than just a set of words which carry meaning that is ultimately transferred when interpreting from one language to another. On a deeper level, it carries loads of linguistic, cultural, ideological and personal elements that differ from one speaker to another, and has layers that a communicator in their own language understands inherently and innately, which the interpreter –speaking more than just one language- must also come to understand and detect. Understanding these elements conveyed by the speaker, to then transfer them towards the receiving end, requires that the interpreter sees beyond the linguistic and semantic elements and reaches further towards what many call ‘thought-worlds’(Whorf, 1956; Vinay & Darbelnet, 1958; Namy, 1978).Not only that, the interpreter must then attempt to understand, convert and transfer meanings grasped through those layers as faithfully and accurately as possible, taking into account the various differences between source and target languages. Arjona (1978) explains this process quite well as shown in Figure 1.

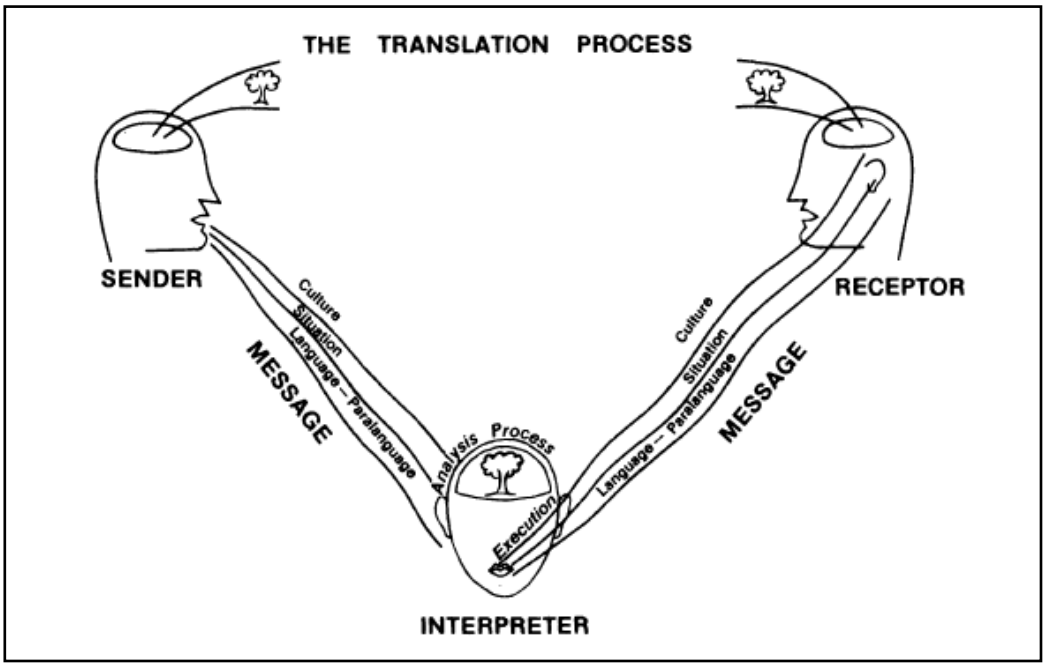


Figure 1: *Arjona's (1978) Translation Chain*

(*Note*.From "Intercultural Communication and the Training of Interpreters at the Monterey Institute of Foreign Studies", by E. Arjona, in D. Gerver & H. W. Sinaiko (Eds), *Language interpretation and Communication* (p.37), 1978, Plenum Press, New York and London.)

In the diagram, Arjona (1978) presents a translation model based on the speech chain model as a way to explain the different roles and tasks that an interpreter takes on in a given communicative situation, taking into account the different linguistic and cultural elements that are fundamental to interpersonal communication. She argues that the interpreter performs three main operations:

1. **Analysis**: when he first receives the original message, he must examine the verbal and non-verbal elements as well as the psycho-cultural nature of source language. This includes everything from the choice of words, to the speaker's tone and gestures, up to the elements that are particular to his background and which shape his identity such as ethnicity, religion and social norms.
2. **Processing**: once detected, all these information must then be processed and the sender's message and intent comprehended as accurately as

possible. The interpreter's knowledge, competence and experience contribute greatly to the success of this operation.

3. **Execution**: finally, the interpreter transfers the inferred information in accordance with the linguistic, paralinguistic and cultural counterparts in the receiver's language and culture, the same way it was done with the original message.

It should also be mentioned that communicative situations differ, and that the context in which the situation takes place plays a major role in the overall interaction and dictates the manner in which the interpreter executes these tasks. This model is but one of many which seek to describe how interpreters attempt to navigate the interwoven web that is human communication. As Herbert (1978) argues, there is perhaps no better facilitator of communication than the interpreter. "It is his own specific professional task to help people, whether individuals or groups, not only to know each other –which often merely leads to friction- but to understand each other, to talk constructively rather than fight" (Herbert, 1978, p.9).

Taking the aforementioned elements and complexities of the communication process into account, achieving this mediation task requires a relatively higher level of cognitive abilities and skill, which is why it is no longer sufficient to view interpreting from a purely linguistic or communicative lens, but to turn towards cognitive science in order to better understand how interpreters are able to work through the complexities of this process almost miraculously.

This brings us to the question of the overlap between interpreting studies and cognitive sciences.

1.2 Cognitive Psychology and Process-oriented Interpreting Research

When studying the historical development of translation and interpreting studies, we can see the different theories and schools of thought which prompted the scientific study of translation. And while the usual approach would be to track this development, going over the main theories that emerged first with the linguistic approach lead by the likes of Nida (1964) and Catford (1965), followed by the functionalist approach represented by Reiss and Vermeer (1984) among others, all the way to the more recent trends focusing on translation technology and the human vs. machine debate; we believe it more practical and convenient to focus on a particular part of translation and interpreting studies, which is the cognitive and psychological approach. This is for two main reasons: first, the theories and studies within this approach are primarily concerned with interpreting, as opposed to the other theories which focus mainly on translation. Second, this approach, which remains relevant today, relies on and is highly interested in cognitive and psychological sciences, a key element in our present study.

The study of translation and interpreting as processes garnered more interest by the second half of the twentieth century, where the earliest works at that time had first approached the interpreting process from a linguistic point of view similar to that studying translation, seeing it as a language switching operation whereby an input in one language was transferred into an output in another language, i.e., mainly through lexical and syntactic equivalence (Pöchhacker, 2005). Admittedly, this approach was not purely linguistic as it also focused on the communicative function of translation and interpreting as exemplified by some works of the Leipzig School (Kade & Cartellieri, 1971). However, the approach predominantly conceptualized the interpreting process as an act of linguistic mediation, failing to shed light on the main actor, the interpreter, and the wide range of mental processes involved in the operation such as memory, analysis, attention and language switching. The revolutionary shift towards the

cognitive study of the interpreting process did not occur until psychologists and psycholinguists turned towards interpreters themselves and became interested in finding out what happens inside the 'black box', a subject which had not been tackled before. This breakthrough has since had a great impact on interpreting research, and following is an overview of the major theoretical contributions to the field, which we categorized according to two main periods: psychology in the 1970'-80's, and interdisciplinarity from the early 1990's onward.

1.2.1 Psychology in Interpreting Research

It would be almost impossible to give a detailed account of all the works that fall under this headline for a number of reasons, most important of which being the large number of publications across different time periods as well as different schools and geographical locations. When going over the literature, one is often faced with the different studies aimed at drawing a map of the different phases, figures and milestones of interpreting research development, and is constantly reminded that these are but attempts which can never be completely comprehensive. For one thing, Pöchhacker (2005) explains that this is due in part to these works being largely centered on Europe, failing to highlight other contributions made at the same time in other parts of the world such as Russia, Japan and the US. Nevertheless, we would like to try and shed light on the most prominent works that made use of psychological research, particularly relating to the study of interpreting as a cognitive process.

Among the first scholars to be interested in the study of the mental processes involved in interpreting were David Gerver, Ghelly Chernov and Danica Seleskovitch. They are often referred to as the pioneers of the psychological approach to interpreting research (Setton & Hild, 2004; Pöchhacker, 2008), which is why we will attempt to give a brief recount of their major contributions to the field.

1.2.1.1 Chernov's probability-prediction SI model

Being both a practitioner and a researcher- or what later came to be labeled by Gile (1994) as a *practisearcher*- Chernov drew on multiple theories from different branches of psychology, such as the Theory of Activity, in order to investigate cognitive aspects of simultaneous interpreting (Chernov 2004). His psycholinguistic SI model attempted to explain strategies used by the interpreter to infer meaning (Chernov, 1973), emphasizing the role of *probability prediction* in SI (Carlet, 1998) and providing a theoretical framework for understanding how interpreters process information in real-time. The model also conceptualized SI as a dynamic process where interpreters rely on *redundancy* in the source text to predict and infer meaning (Setton & Hilda, 2004), and this approach shifted the focus from product-oriented analysis to the cognitive processes involved in interpreting. Chernov's work was one of the earliest attempts at bridging the gap between psychologists and interpreting professionals. Yet, although first published in 1987, the author's work did not garner much attention until the publication of the English translation in 2004. The model was later criticized by Gerver (1975) for being too superficial and failing to explain how the interpreter could deal with the limitless possibilities of sentence combinations that would offer different meanings. Nevertheless, it remains a cornerstone in the history of empirical interpreting research.

1.2.1.2 Gerver's psychological approach to interpreting

Driven by his interest in cognitive behavior, Gerver sought to explore the complex mental processes executed by interpreters, particularly when performing simultaneous interpreting. In his paper on SI, Gerver (1975) proposed one of the first models to describe the process, illustrating how interpreters manage to distribute tasks, allocate attention and make use of capacities such as memory and analysis. What distinguished this work was his use of theories from experimental psychology. For example, Norman's (1968) and Kahneman's (1973) studies on memory, attention and effort were used to

theorize on how an interpreter can simultaneously receive an input, produce an output that corresponds to the original on different levels, and still be able to store incoming information via what is known as buffer stores (Gerver, 1975). Gerver (1974a) also explored other process-related issues such as the impact of noise on the interpreter's SI performance, and how simultaneous listening and speaking affects comprehension and recall (Gerver, 1974b).

The use of such controlled experiments which included interpreters and testing out specific elements of the interpreting process such as speech rate and external noise was uncommon at the time and offered deep insight into aspects of the practice that would not have been addressed otherwise. Consequently, Gerver's work inspired similar models grounded in experimental psychology, such as Moser's (1978) SI processing model which draws upon Massaro's (1975) information-processing model.

1.2.1.3 The Interpretive Theory

The Interpretive Theory of Translation (ITT), also known as the *Theory of Sense*, had first emerged from the Paris school in the 1970's. It was developed by Seleskovitch, a French interpreter and scholar at the *Ecole Supérieure d'Interprètes et de Traducteurs* (ESIT). Her work was later expanded on along with her associate Marianne Lederer (Seleskovitch & Lederer, 1984, 1989). The idea behind the interpretive theory came from Seleskovitch's own experience as a conference interpreter, reflecting on her work in order to better understand the practice for didactic purposes. As opposed to earlier psychological studies, Seleskovitch rejected the manner in which behaviorism, generative grammar and experimental psychology viewed the language-sense paradigm, and relied instead on works from developmental psychology –Piaget's works in particular-, in order to understand the relationship between language and the mind, and how interpreters develop strategies to grasp and build meaning in their minds (Lederer, 2010).

The main contribution of the interpretive theory to interpreting studies was the shift from the study of the act of translation as a *product* towards a focus on the *process*, investigating interpreting as a mental operation. According to the Holmes-Toury map of translation studies (Holmes, 1972; Toury 1995), the works of Seleskovitch as well as numerous other scholars that built on her research fall under the Descriptive Translation Studies (DTS), and more specifically within process-oriented research which focuses on understanding the cognitive processes that translators and interpreters engage in when producing a target text, be it oral or written. For interpreting, this approach seeks to investigate the steps and mental processes involved in this operation, shedding light on the strategies and decision-making processes that occur during interpreting tasks. This evidently cannot be done independently of insight from psychologists. Holmes himself suggested this area of research could be explored further under the name of psycho-translation studies (Holmes, 1972).

In the early days of the establishment of conference interpreting as a profession during the 1945 Nuremberg Trials, a common misconception which prevailed was that any speaker of two languages could simply transfer the words and sentences he hears from one language to the other. In practice, however, it was quickly revealed that this idea could not be farther from the truth, as an examination of interpreted speeches revealed that this method produced inaccurate renditions littered with errors of meaning, syntax, homophones and *faux-amis* to name a few (Seleskovitch & Lederer, 1984). This was one of the main issues dealt with by the ITT. The aim of the theory was to reconstruct the process of translation from a transcoding operation into a process conducted in three main phases:

1. **Comprehension:** according the ITT, comprehension of speech is not a linear process, meaning that a listener does not understand a speech word after word. Rather, comprehension requires the formation of ‘units of

meaning' which are made up by small segments of speech put together to make up a more general idea (Lederer, 2016). In order to understand the process of comprehension for interpreters, the ITT relied on Piaget's theory of assimilation/accommodation, explaining how interpreters gain understanding by relying on the building up of new information on top of previous knowledge and the adaptation of old ones to new situations. This highlights the importance of context as well as the interpreters' knowledge, which are indispensable to the comprehension process.

2. **Deverbalization:** this concept is perhaps the most significant introduced by the ITT. It suggests that while meaning is transferred by means of linguistics signs, once assimilated, it takes on a different form in the interpreter's mind that is detached from the words that carry it; a *deverbalized* form. This hypothesis was corroborated by research in psycholinguistics and neuropsychology, particularly works on memory and aphasia showing that information in the mind is not stored in its linguistic form, which explains how interpreters manage to successfully render the meanings of a speech in its entirety yet with expressions that are completely different from the ones in the source language (Lederer, 2016).
3. **Re-expression:** re-expression or reformulation here refers to the delivery of a text or speech in the target language which corresponds to the original one. This does not necessarily mean that the two must have the same syntactic or lexical structure. Rather, the process of deverbalization mentioned above grants a certain freedom to the interpreter –the translator as well- which releases him from the linguistic form of the text, allowing for what Lederer (2016) calls discourse equivalence. It should be noted that this does not apply to all elements of the speech, as there are certain terms and expressions which cannot be altered such as numbers, proper names and technical terminology. These elements have 'permanent

> correspondences' since their meaning refers to the same thing in both the source and target languages (Seleskovitch & Lederer, 1984).

In addition to explaining the process of interpreting, the ITT tackles the various difficulties that arise during the translation and interpreting process, and particularly emphasizes the role of the interpreter as a facilitator of communication. In order to achieve it according to Seleskovitch and Lederer (1989), linguistic competence and mastery of languages are not sufficient. On the contrary, it is but one of the many competences that he must develop. Another key factor is extra-linguistic knowledge, which the interpreter must rely on in order to effectively comprehend and then transfer meaning. Extra-linguistic knowledge helps achieve comprehension by supplementing additional context to the speech. It provides cultural, thematic and contextual information that is not explicitly conveyed through language itself, yet plays a major role in understanding meaning beyond what is actually uttered. For example, the phrase 'break a leg' may be translated literally instead of understood as a wish for good luck, resulting in confusion or misunderstanding caused by unfamiliarity with idiomatic expressions. Lastly, the ITT also had significant methodological implications for interpreting education, which we will discuss in further detail in chapter two.

Despite the impact that the ITT had on interpreting and translation research, it is worth noting that the ideas and approaches championed by Seleskovitch and her associates did not go unchallenged, as many criticized the paradigm that was established for not attempting to branch out into other disciplines, prompting the newer generation of scholars to call for a more interdisciplinary approach (Pöchhacker, 2015).It should also be stated that there had been other process-oriented studies at the same period of time drawing upon findings from psychology (such as Goldman-Eisler, 1972; Moser, 1978**),**but we chose to select the aforementioned works as they had the earliest and most notable impact on

interpreting research. This incorporation of psychology in translation and interpreting research had set the ground for a new vision for how research would be conducted onwards. By the mid 1980's, a new movement began calling for the opening up of the field towards other sciences, prompting collaboration across disciplines and bringing about what Gile (1994) described as a 'Renaissance' of interpreting studies.

1.2.2 Interdisciplinarity in Interpreting Research

Among the earliest efforts to promote interdisciplinarity in interpreting research was Gerver's *International Interdisciplinary Symposium on Interpreting* in 1977, which saw the coming together of 96 researchers from different countries and across various scientific disciplines such as linguistics, sociology, psychology, and psychiatry, concluding with the publication of the book *Language Interpretation and Communication* which tackled multipletopics related to the interpreting process and profession (Gerver & Sinaiko 1978).Another initiative in this regard was Moser-Mercer's first international peer-reviewed journal *Interpreting* (Pöchhacker, 2004: 41). Its editorial board comprised members from different fields such as cognitive science, psychology and neuroscience. Interdisciplinarity meant that research would be conducted across different schools, countries and fields of study. Assembling data and results from this huge network of researchers would prove challenging, and among the immense efforts made for this purpose was Gile's establishment of the *Conference Interpreting Research Information Network*, known as the CIRIN Bulletin. Published semiannually, the bulletin seeks to provide helpful information on conference interpreting research and facilitate the spread of knowledge on the topic.

While interpreting research at this stage discussed multiple issues, the main center of interest was the study of interpreting as a cognitive process. Multiple aspects of the process were investigated and analyzed with the use of insights

from a wide range of research fields. Neurolinguistics, for example, approached the analysis of interpreting from a speech processing viewpoint, as it considers interpreting "an activity of bilingual speech processing under very specific conditions"(Ahrens, 2011,p.105). One of the most notable contributions from this field is the model proposed by Paradis (1994), in which he relies on his extensive research on bilingualism highlighted by his Subset hypothesis and Activation hypothesis in order to explain the process of simultaneous interpreting. More specifically, Paradis provides a description of the various cognitive operations employed during the process such as echoic memory, short-term memory, encoding and decoding, and attempts to illustrate how they are simultaneously and systematically engaged when interpreting (Paradis, 1994). One interesting point in Paradis's work is mentioned in his description of the two main strategies employed by interpreters (a meaning-based strategy and a linguistic-transcoding strategy), in which he describes the former as the *usual* strategy, which relies on mental representations based on comprehension of the original message as a means to translate (Paradis, 1994, p. 328). This further validates the argument put forward by psychology and process-oriented schools such as the ITT, which rejected the earlier linguistic word-for-word approach in favor of a form-independent one.

This is further corroborated by another of Paradis's research into the bilingual mind, his neurolinguistic model, in which he suggests that the bilingual mind stores information through a common cognitive system that both languages draw conceptual items from (Paradis, 2004).This is in contrast with the idea of completely separate systems for each language; meaning that for both languages, only one representation is present in the mind regardless of the language, which is similar to the idea of deverbalization put forward by the ITT. However, Paradis (2000) stresses the importance of reconsidering how we think about words and their meanings, by making the distinction between the

semantics confined to the language system they are used in -meaning that the same words might not entirely refer to the exact same thing across languages-, and the nonlinguistic mental representations that refer to the same concepts that are universal and independent from language systems. For instance, let us consider the words "dog" in English and "chien" in French. In both English and French, the words refer to a domesticated animal that is often kept as a pet. It has various breeds, characteristics, and cultural associations. Yet, there may be nuances in how people in different cultures think about dogs, which can influence the specific meanings attached to each word. The French for example have a tendency to purchase pure breed dogs, while the English are more likely to adopt dogs from a shelter. This is to say that even though both languages refer to the same animal, the meanings and mental representations associated with each word can vary, and this, according to Paradis, is influenced by the cultural backgrounds in which the languages were acquired. This illustrates how our understanding of words is shaped by both linguistic and non-linguistic factors, another point that is highlighted by interpretive and non-linguistic theories.

Cognitive psychology has also had a great impact on interpreting research. Multiple theories and models were developed to explain different mental processes. Some models tackled certain cognitive operations related to language acquisition and language processing such as working memory (Cowen, 1999; Baddeley, 2000). The findings of such works were later applied to interpreting process studies. Drawing from his immense work on human memory, Alan Baddeley presented a language processing model which focuses on working memory, in which he presents a component of human memory that could explain how the interpreter's mind is able to manage incoming verbal information, by storing certain information for a short period of time enough to comprehend speech. Called a 'phonological loop' (Baddeley, 2000), this element of a multi-component system is essential for language comprehension,

especially complex or sophisticated speech. While it essentially discusses cognitive issues, Baddeley's research was published as part of the *International Symposium on Language Processing and Interpreting*, a testament to the growing interest in developing interpreting research. His work has had a significant impact not only on the field of psychology, but was used to develop interpreting process models such as Darò and Fabbro's SI model that uses Baddeley's model as a basis for their working memory system (Darò & Fabbro, 1994).

Among the key topics also discussed with insight from cognitive psychology is Cognitive Load, a concept which was and still is the main focus of a big portion of interpreting process research. Cognitive load refers to "the mental workload imposed on a performer when executing a particular task" (Zhu & Aryadoust, 2022, p.2). Different tasks impose varying amounts of cognitive load. While some tasks are executed effortlessly, others require more effort or may even prove impossible to do, much like physical exertion. When performing complicated and difficult tasks like interpreting, the high mental workload experienced by the individual can eventually have negative effects on his performance. Tasks may take longer to execute, and errors become more frequent as the brain gets overwhelmed. According to the Cognitive Load Theory (CLT; Sweller et al., 2011), this is the result of excessive strain on Working Memory, which is a pivotal component for information processing as it serves as a temporary storage and manipulation space for new information. However, WM's storage capacity is very limited, amounting to 5 to 9 items for a maximum of 20 seconds or even less sometimes (Paas & van Merriënboer, 2020), and presenting too much information at once can lead to cognitive overload which hinders the processing operation. Thus, it was CLT's main instructional goal to inquire into human cognitive processes, exploring views on how to manage cognitive load, optimize the use of WM and eventually enhance

learning outcomes (Sweller et al., 2011; Paas & van Merriënboer, 2020). This idea ties directly into interpreting-process research, which focuses largely on understanding human cognition for skill acquisition and development. Much of the data available on cognitive load during the interpreting process was initiated and largely investigated by Daniel Gile (1985; 1995a) and Kilian Seeber (2011; 2015).While Gile tackled the issue of cognitive load as part of his Effort Models, Seeber's research mainly attempted to develop methods for defining and measuring cognitive load during SI (Seeber, 2011; 2013). Their findings have contributed greatly to understanding the cognitive efforts and strain interpreters have to manage, which in turn has had significant implications for interpreter training and education. A more detailed exploration of their work will follow shortly.

Lastly, studies into the interpreting process in recent decades went even further than discussing the neuro-linguistic and psychological aspects of the practice, exploring the neuro-physiological mechanisms that occur when interpreting as well. This was conducted using advanced technology and complex methodologies primarily aimed at exploring the bilingual brain, such as Functional Magnetic Resonance Imaging (fMRI) and Independent Component Analysis (ICA)(Hervais-Adelman et al., 2015; Koshkin et al., 2018; Hervais-Adelman &Babcock, 2020).Such studies helped shed light on the different types and causes of cognitive efforts engaged during complex language switching tasks likeSI, while also revealing evidence as to the cognitive mechanisms that control and coordinate such efforts, like executive control and working memory (Diamond & Shreve, 2019).

Importance of Interdisciplinary Approaches:

On this basis, the interdisciplinary approach proved to be a revolutionary step in interpreting research in that it broadened the horizon of the discipline, which allowed it to address complex issues that would have been impossible to view

from a single disciplinary lens. Its significance is also reflected in the enhancement of research quality, resulting in more systematic research methodologies that combined different quantitative and qualitative methods which ultimately provided more robust and reliable empirical data.In consequence, the different studies stemming from different disciplines, and particularly studies on the interpreting process, lead to the elaboration of various theoretical frameworks and models that tackle different mental processes involved in interpreting. Following is an overview of two of the most prominent and influential models in interpreting research.

1.3 Interpreting Process Models

1.3.1 Mizuno's SI Process Model

By this point, the importance and effect of working memory on interpreting performance had been largely discussed and agreed upon (Darò & Fabbro, 1994; Padilla et al., 1995; Bajo et al., 2000). For this reason, researchers such as Mizuno sought to explore this role further with the belief that it will outline the different mental challenges encountered during simultaneous interpreting. Drawing from research into working memory, Mizuno (2005) touched on multiple topics, such as the concept of 'articulatory suppression' which refers to the process of repeating words while reading or listening, often used in psychological experiments to understand how it affects the interpreter's ability to comprehend and relay a message. Mizuno (2005) suggests that understanding this mechanism could lead interpreters to develop ways to overcome the possible challenges posed by it. With a particular emphasis on the role of working memory, he proposed a framework that describes the cognitive processes involved in SI. The model highlights the dynamic and multifaceted nature of the interpreting process and is based primarily on Cowan's Embedded Processes Model (Cowan, 1999).In consequence, Mizuno (2017) presented the following framework, taking Cowan's working memory model and adding two

elements relevant to the interpreting process: a language comprehension and a language production system.

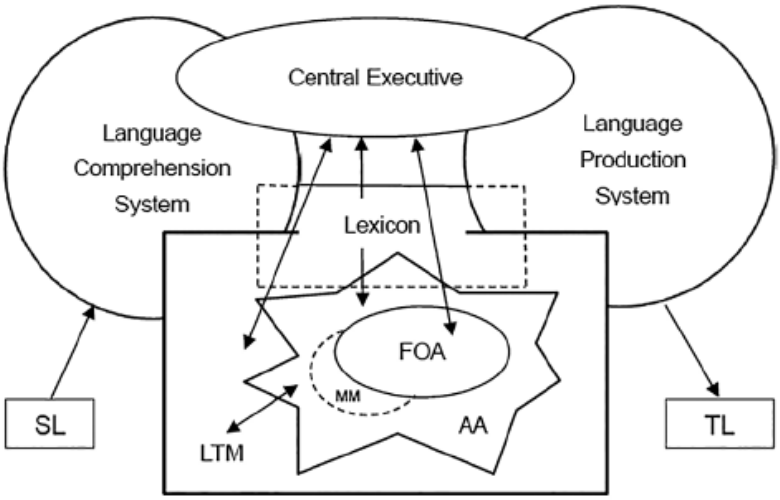


Figure 2: *Mizuno's (2017) Interpreting Process Framework*

(*Note*.From "Simultaneous Interpreting and Cognitive Constraints", By Mizuno, A. 2017.p. 14.*Bulletin of the College of Literature*, Aoyama Gakuin University, n°58, pp. 1–28).

The model distinguishes between two primary systems, which ultimately rely on working memory to function effectively:

1. **Language Comprehension System**: This handles listening to and understanding the source language.
2. **Language Production System**: This is responsible for producing the output in the target language.
3. **Working Memory:** Mizuno employs Cowan's embedded model of working memory, which posits that working memory consists of a central executive and various subsystems that manage different types of information. Based on the model, working memory is considered to be a "temporarily activated portion of LTM", as is evident in its placement in Figure 2 (Mizuno, 2017, p.5). This model is crucial for understanding how interpreters retain and manipulate information while interpreting

simultaneously through an interplay of mechanisms that working memory relies on represented by:

- Central Executive: it is crucial for working memory in that it serves a number of functions indispensable for complex information-processing and the management of the flow of information between the language comprehension and production systems. Such functions include selective attention, coordination of tasks, inhibition of interfering or distracting information, and the maintaining and manipulation of information in LTM to name a few (Timarová et al., 2014). For example, it is the central executive that directs the interpreter's attention to relevant information in working memory while simultaneously retrieving necessary linguistic and conceptual elements from long-term memory. This wide selection of functions and tasks executed by the central executive showcases the actual role of working memory that is more concerned with the processing of information than with simple storage. This is mainly what distinguished WM from STM.
- Focus of Attention (FOA): Mizuno emphasizes the concept of the focus of attention, which refers to the subset of information that is actively processed at any given moment. In order for a memory or information to be processed by WM, it needs to be brought to the FOA (Zheng & Kuang, 2022). Additionally, the interpreter must have the ability to maintain relevant information in it while accessing previously activated data in order to interpret effectively. This focus is limited in capacity, suggesting that interpreters can only hold a few pieces of information in conscious awareness while interpreting, which according to Cowan's model amounts to 3 to 4 'chunks' (Mizuno, 2017).

The issue of Cognitive Load:

In 2017, Mizuno presented a more detailed work on the process of SI with an emphasis on the concept of cognitive load, which refers to the mental demand placed on interpreters when managing multiple tasks at once. According to Mizuno (2017), cognitive load that causes interpreting errors results from a memory load in WM, wherein interpreters face difficulties when listening, translating or speaking. This causes a delay in information processing and eventually leads to more information being crammed up in WM. In order to manage this load, interpreters resort to various strategies, which in the case of interpreting between languages that are not similar in structure such as English and Japanese, usually consists of syntactical reformulation, prediction and simplification (Mizuno, 2017). These strategies help reduce cognitive overload and improve the accuracy of interpretations. For instance, interpreters may omit non-essential details or rephrase complex sentences to maintain fluency and coherence in their translations.

Attention-Switching:

Another issue addressed by Mizuno's model is the question of attention-switching in SI. The explanation of attention-switching or divided attention performed by interpreters is also taken from Cowan's model, in which it is argued that interpreters engage in selective attention, constantly shifting their focus among various tasks—listening, interpreting, and speaking, and this process is not strictly simultaneous but occurs in a conterminous manner, where attention is rapidly redirected as needed (Yagura et al., 2021).

Empirical Application of the model

Mizuno's model is not merely theoretical; it has been applied to analyze real-world interpreting scenarios, particularly between Japanese and English (Mizuno 2005; 2017). By examining a corpus of simultaneous interpretations, he illustrates how cognitive overload can lead to translation failures even when

interpreting relatively easy content, which is caused by working memory and cognitive overload issues. The results also showcased some of the specific strategies employed by interpreters in order to mitigate these issues, which could ultimately provide methodological insights for interpreting training.

Training Implications:

Mizuno's model for simultaneous interpreting has several implications for the training of interpreters, particularly in enhancing their cognitive and linguistic skills. By understanding how working memory and attention can be effectively managed through practice, training programs can focus on developing strategies that enhance mental flexibility and maximize performance under pressure. This includes exercises that target the development of WM, attention management and cognitive load reduction strategies such as syntactical reformulation, which Mizuno considers elementary for SI skills.

In summary, Mizuno's model is significant in that it emphasizes the idea of the interpreting process not being a linear step-by-step operation, but rather an overlap of multiple operations executed at the same time, with an emphasis on working memory being an essential component of the process (Mizuno, 2005). The model also discusses the issue of cognitive load and the mental operations interpreters resort to in order to manage it such as memory and attention as a way to achieve better interpreting outcomes. Furthermore, Mizuno's work contributes to interpreter training, by presenting common interpreting strategies and calling for the development of mental skills in order to help interpreters cope with the difficulties more efficiently. A point worth mentioning is that although originally referred to as an enlarged embedded process model for SI (Mizuno, 2005), Mizuno (2017) later mentions that he does not consider this framework to be a standing model for the SI process, but rather a description of the relationship between the language comprehension system, language production system and working memory. Furthermore, the model targets the

processes involved in simultaneous interpreting only and does not investigate other interpreting modes. To this end, Mizuno emphasizes the idea that the modal is not comprehensive and should be viewed along with similar models that he also highlighted in his research, such as Gile's Efforts model.

1.3.2 Gile's Effort Models

Gile's Effort Models were the result of his observations of the various struggles trainees deal with when interpreting, and his desire to find and offer solutions for such struggles (Gile, 2021). Despite being part of ESIT and the ITT School, Gile found problems with certain aspects of the theory which he believed did not account for some issues in the interpreting process, like the lack of evidence for the notion of deverbalization and the claim that interpreting into one's A language does not pose any difficulties on the interpreter (Gile, 2021). He was also against the ITT's disregard of interdisciplinarity in interpreting research, particularly in relation to data from cognitive psychology and psycholinguistics which he believed could contribute greatly to the field. And while the Effort Models were originally the result of his observations and introspection, the models were and continue to be reviewed and checked for validity in line with the latest findings in cognitive psychology and other related fields. However, before discussing the models in question, it is first important to define what is meant by *effort* in this context.

Cognitive 'Effort' in the Interpreting Process

A key element to understanding the interpreting process, *cognitive effort* has also had its fair share of dedicated research. According to Tyler et al. (1979), cognitive effort refers to "the engaged proportion of limited-capacity central processing" (p.607). In simpler terms, it concerns the amount of mental resources allocated to a specific task or activity. From the definition, we can deduce that the *engaged proportion* indicates that it does not refer to the total cognitive ability of the mind, but how much of it is used to complete a given

operation. The second part, the limited-capacity central processing, suggests that the human brain has a limited amount of cognitive resources, meaning that it can only process a finite amount of information at a time. To illustrate better, let us think of the overall cognitive capacity as a budget. One can only have a limited amount of 'mental bills' to spend at any moment. When the person engages in a certain task, like solving math problem or listening to a podcast, they allocate some of that budget/effort to concentrate and process the information at hand. Evidently, unfamiliar or complex tasks require more cognitive effort compared to familiar or automatic everyday tasks. This definition therefore suggests that cognitive effort involves an active and purposeful use of this limited resource, depending on task requirement. Unlike automatic actions, cognitive effort requires attention and concentration in order to complete a given task. As Zou & Zhang (2023) state, there is a number of factors which can influence this type of effort, such as task difficulty, a person's knowledge as well as personal motivation. Yet, in interpreting studies in particular, Gile (2009) notes that cognitive struggle is not particular to highly-demanding interpreting tasks that involve dense and technical content, but can be observed in simpler supposedly non-demanding speeches as well. This is proof that the interpreting activity in itself is complex and mentally-demanding, which explains why not only beginner trainees show cognitive struggles when interpreting but professional interpreters as well. With this in mind, he tried to explain the interpreting process with a particular emphasis on the cognitive constraints that interpreters encounter in order to learn how to overcome them, ultimately presenting several conceptual models concerned with the main modes of interpreting: SI, CI, sight translation and sign-language interpreting.

Cognitive constraints during interpreting

The Effort models (Ems) are based on two main constructs: that the interpreting task requires some 'mental energy' which is limited, and that interpreters use all of that amount and may require more, which eventually affects their performance and leads to errors or failures (Gile, 2009, p.159). This brings us back to the idea of cognitive load discussed earlier and how a higher mental workload is the natural result of interpreting where multiple language processing tasks are executed at once. When the interpreter's mind is cognitively saturated, this results in errors, omissions and infelicities (EOIs) evident in the interpreter's production of the TL speech in both content and form. Content EOIs include unnecessary omissions, meaning distortion and extra information not present in the source speech. As for the form, EOIs are materialized into poor grammar, pronunciation and enunciation issues and an inadequate use of the language (Alhalaki, 2019).Gile (2021) notes that this particularly was interesting to him as it was observed that these EOIs do not necessarily result from a lack of understanding or of linguistic competence. Quite the opposite, he notes that oftentimes, trainees master the languages quite perfectly but still struggle to interpret relatively easier speeches that should not pose any comprehension problems in theory. Assuming language mastery is not the issue, some of the main constraints faced by interpreters when performing presented by Gile (1995b;2009) include:

- Time pressure;
- The expression of ideas and information that are not their own, often leading to a reformulation of the message before even grasping it in full;
- Sharing attention across different interfering tasks (language comprehension, production and information retrieval and retention);
- Linguistic interference.

Dealing with such constraints requires that the interpreter stays alert and allocates enough attention to processing them. This kind of operations which require focused attention are non-automatic, meaning that they are time and (mental)energy-consuming, as opposed to automatic operations which are executed swiftly and effortlessly. Furthermore, Gile (2009) postulates that these operations are constantly competing for attentional resources. As the amount of those resources is limited in capacity, the more these non-automatic operations are running, the more likely it is that the processing capacity is surpassed, leading to performance deterioration (Gile, 2009). And while it is often difficult to distinguish between the two, automatic operations can be considered as those which are readily available to the interpreter such as recalling the name of a familiar place or figure, as opposed to non-automatic operations that deal with less familiar information under challenging conditions, like storing multiple units of meaning in memory while attempting to keep up with the speaker's fast delivery. With this in mind, Gile (1995b, 2009) constructed models that account for the interaction between such operations. For considerations of the present work, we will only highlight the models for the two main interpreting modes: SI and CI.

Effort Model for Simultaneous Interpreting:

In order to make it easier to grasp as an instructional material, Gile (2008) described the process of SI as "a set of multiple cognitive operations which can be grouped into three 'Efforts'"(p. 59), later updated to include a fourth one (Gile, 2009). He refers to them as such in order to emphasize their inherently effortful nature, indicating that they require conscious decision-making and resource allocation. The Efforts in question can be categorized as follows:

1. The Listening and Analysis Effort: This refers to the set of mental operations responsible for the perception and comprehension of the original message. A number of operations are executed here depending on the difficulty

of the source speech, either due to the content or specific characteristics of the speaker such as accent or style. Context, coupled with the interpreter's extralinguistic competences, contributes greatly to overcoming such difficulties at this stage (Alhalaki, 2019).Analysis is added to this component alongside listening because the latter by itself is not sufficient for comprehension. The listening part involves the first step which is speech recognition and retrieval of corresponding meanings from LTM, which must then be followed by a deeper analysis of the contextual, cultural as well as ideological elements embedded in the speech as a whole. This is in line with the interpretive approach which emphasizes the interpreter's proclivity to see sense beyond the words. According to Gile (2009), these aspects are a clear indication of the non-automatic nature of the processes involved in this component.

2. The Production Effort: This refers to the mental operations used for producing the speech in the target language, "…from the mental representation of the message to be delivered to speech planning and the performance of the speech plan, including self-monitoring and self-correction when necessary" (Gile, 2009, p. 163). The operations involved in this process are also considered non-automatic, as is evident in the various mistakes, hesitations, repetitions and self-corrections made by the interpreter. One explanation for such errors is the fact that unlike the SL speaker, the interpreter is not expressing his own thoughts and ideas, but rather following the utterances of someone else who could at any time change the direction of his speech, leaving the interpreter constantly alert trying to keep up with not only the production, but the rest of the efforts as well. An additional layer of difficulty is added when the interpreter is not familiar enough with the subject and its terminology, requiring him to put more effort towards finding the appropriate equivalents for reformulation in the TL (Alhalaki, 2019).

3. The Memory Effort: This effort refers to the mental operations are responsible for storing and retrieving information in Short-Term Memory. Gile (2008, p.60) specifies that this effort is "distinct from but in many ways similar to the cognitive psychologists' working memory model(s)". When dealing with speech comprehension or production operations like waiting for the speaker to finish a segment to infer the correct meaning, or taking a few more seconds to think of the right way to structure the target sentences, the memory effort serves not only as a storage area where information is held for some time (no longer than mere seconds), but also as a constant analysis system which puts pieces of information together and allows for critical decision-making and problem-solving. These processing operations are undoubtedly non-automatic (Gile 2009).

In the model, Gile makes the distinction between STM and WM, primarily through the roles they play in the interpreting process.STM is concerned with the retention of information from the moment a speech segment is heard until it is reformulated in the target language. He also emphasizes that this process is non-automatic as it involves actively managing ever-changing information elements, which can lead to cognitive overload if not balanced properly with the other efforts (Gile, 1999; 2021).WM, on the other hand, encompasses a broader range of cognitive functions beyond mere retention of information, including the manipulation and processing of that information to perform complex tasks. The memory effort was simply not called a WM effort because the latter is also involved in operations pertaining to the listening and production efforts, which makes it difficult to explain as a standing effort. On this point, Gile (2021) explains that memory was not incorporated into the other two because of the didactic aim that the EMs were originally designed for, that to facilitate the understanding of such cognitive processes by trainees. Overall, Gile’s approach emphasizes STM as a functional tool for didactic purposes, while WM is

recognized as an essential construct within cognitive psychology that underpins STM operations, which is why he also stresses the importance of presenting notions of WM as part of interpreting training.

4. Coordination Effort: Gile (2008) compares this effort to Baddeley and Hitch's Central Executive discussed previously. While not in the original model, this effort was later added to account for the appropriate distribution of resources between the three main efforts. It allows the interpreter to redirect attention to each effort as needed, like focusing more on speech comprehension or information retention in memory than on note-taking in CI; or more on speech production than listening if too much information is piling up during SI (Gile, 2021). Gile's model is grounded in Kahneman's single resource theory (Zhu & Aryadoust, 2022), which posits that interpreters draw from a shared limited pool of cognitive resources. Since the three main efforts draw from a single pool of limited cognitive resources, effective coordination is essential to avoid overload and maintain performance, hence the coordination effort.

When all the efforts are combined, the Effort Model for Simultaneous Interpreting becomes as follows:

- SI = L + P + M + C

What should be noted is that each Effort consists of a number of non-automatic components. These components require active mental processing including significant processing time and capacity. When two or more Efforts are acting simultaneously -for instance, listening and analyzing while reformulating in the TL- it demands significantly more processing capacity than handling one Effort alone. This increased demand can push interpreters closer to their cognitive limits, and Gile argues that they often operate near full capacity, according to what he calls the "Tightrope Hypothesis" (Gile, 2009; 2021).The plus signs in these models do not specifically mean that these efforts are combined in the

traditional mathematical sense. Quite the opposite, the mental operations involved in each of these efforts can also operate in the remaining efforts, especially working memory which is related to both listening and production tasks (Gile, 2008). This creates a dynamic between the efforts that requires effective coordination in order to balance efforts between the processing capacity available to the interpreter and the capacity required by the interpreting task. To illustrate more clearly, the following table shows the processing components and conditions for successful interpreting according to the model (Gile, 2009):

Table 1: *Processing conditions for SI*

Component	**Requirement (R)**	**Available Capacity (A)**	**Condition**
Total Capacity	TR	TA	$TR \leq TA$
Listening Effort	LR	LA	$LR \leq LA$
Memory Effort	MR	MA	$MR \leq MA$
Production Effort	PR	PA	$PR \leq PA$
Coordination Effort	CR	CA	$CR \leq CA$

Interpreting requires processing capacity (TR) that is shared among the four main efforts. In order for the operation to succeed, the total available capacity (TA) should surpass that which is required for the task (TR). Similarly, the required capacity for each individual effort must not exceed the available capacity. For instance, the effort required for listening and analysis must not exceed the total capacity available to the listening and analysis Effort, and this applies to all the remaining ones. If any single effort exceeds its available capacity, or if TR > TA, cognitive overload is bound to occur, leading to a deterioration in interpreting performance. For example, if the speaker presents long, complex sentences without pauses, the interpreter might struggle to hold the dense information in memory (MR), while also working to process and reformulate it. In this case, MR exceeds MA, which could cause details or

certain information to be lost, resulting in the interpreter missing key points or rendering the original message inaccurately. Moreover, EOIs and failures do not occur only when capacity requirement surpass available capacity, but can also be the result of ineffective management of cognitive resources where the interpreter allocates more attention than necessary to one effort at the cost of the others. This happens often when the interpreter becomes overly focused on producing a perfect translation of a segment, failing to keep up with the listening and retention of newer information as a result. The latter is especially common or even expected from inexperienced interpreters and trainees, but can happen to professional interpreters as well in cases of fatigue or speaker-related challenges (Alhalaki, 2019).

Effort Model for Consecutive Interpreting:

In similar fashion, an Effort model was introduced for consecutive interpreting. The CI model is concerned with long consecutive, also called 'full' or 'true' consecutive, wherein interpreted segments typically last for minutes, as opposed to short consecutive where the speaker pauses after short segments (a sentence or two) to allow the interpreter to render the speech in the TL (Setton & Dawrant, 2016a).This is due to the fact that short consecutive is relatively easy and does not pose significant cognitive load on the mind, compared to long consecutive which is more challenging as the speech is longer and more dense, requiring a high memory effort combined with note-taking. According to Gile's model (2009), consecutive interpreting is divided into two phases:

1. The comprehension phase: it includes four efforts, Listening and Analysis (L), Note-taking (N), Short-term Memory operations (M) and Coordination (C).

- CI (Phase 1) = L + N + M + C

2. The production phase: and it comprises the efforts for Remembering (Rem), Note-reading (Read) and Production (P).

- CI (Phase 2) = Rem + Read + P + C

In addition to the first efforts found in the SI models, new efforts are introduced in this one:

- Short-term memory operations: refers to the operations that deal with the retention of information in memory until it is either noted down or processed into LTM.
- Note-taking: it is concerned with the production of notes once the speech is listened to and analyzed. When executed well, this Effort can help reduce the load for the other Efforts as it makes it easier to recall information and reduce the amount of units kept in STM. However, if it is not systematic and organized, it could lead to additional load during note-reading and production.
- Remembering: it is not the same as STM, but rather concerns the retrieval of information that has been processed from LTM.
- Reading: and it refers to the operations responsible for reading the notes in order to extract meaning and reformulate the message in the TL.

Of the two phases, Gile (2009) argues that phase one is the more cognitively demanding as the interpreter has to coordinate between the competing Efforts, whereas in phase two, he has more time to recall information and reformulate the message without the constraint of listening and speaking simultaneously. This is why the conditions of processing capacity requirements are provided for the comprehension phase only, and they are as follows:

Table 2: *Processing conditions for CI*

Component	Requirement (R)	Available Capacity (A)	Condition
Total Capacity	TR	TA	TR ≤ TA
Listening Effort	LR	LA	LR ≤ LA
Note-Taking Effort	NR	NA	NR ≤ NA
Short-Term Memory Effort	MR	MA	MR ≤ MA
Coordination Effort	CR	CA	CR ≤ CA

In order for consecutive interpreting to be successful, the following overall condition must be met:

LR + NR + MR + CR ≤ TA

This means that the combined capacity requirements for the Efforts in phase one must be equal to or inferior to the total available capacity. Nevertheless, the cognitive load imposed by the mental operations in phase one is still believed to be less than that imposed by SI, due to the advantage note-taking provides for the interpreter of noting down key information, which reduces the load on memory in terms of items that are challenging to recall such as names, numbers, and enumerations (Gile, 2009). However, while it does play a significant role in reducing cognitive load, inefficient note-taking could conversely result in interpreting problems, especially if notes are not clear and systematic. This could result in more time taken to decipher the notes and leads to increased load on the Reading and Production Efforts. Similarly, noting down long information puts a strain on the Listening and Analysis Effort and could lead to the loss of information from the next segments. In this case, solving such problems requires training and a good mastery of note-taking techniques.

In addition to the two main models, Gile introduces frameworks for other interpreting modes, such as sight translation and simultaneous with text. He also provides constant updates regarding emerging modes and variations that could

include other Efforts such as Remote Interpreting, or SI with advanced booth technologies to which Gile (2021) proposes the introduction of a new Effort called Human-Machine Interaction (HMI) to account for the unique aspects of using these tools in such interpreting settings.

The Tightrope Hypothesis

The Ems cannot be discussed without mention of the Tightrope Hypothesis, in which Gile (2009) argues that interpreters operate near their cognitive saturation point, often managing processing demands at or close to their maximum capacity "be it in terms of total processing capacity requirements or as regards individual Efforts" (p.182). His argument is that if interpreters were consistently working well below their cognitive limits, errors would primarily arise from difficulties in the source material itself, which is not consistent with the fact that frequent errors and omissions do occur even when no such difficulties are present, indicating that the interpreting process does pose cognitive difficulties experienced by interpreters when performing (Korpal, 2012).On this basis, balancing Efforts is a core idea of the hypothesis, as the "tightrope" analogy reflects the precarious balance interpreters must maintain between these tasks. If one task demands too many resources, others may suffer, leading to errors or omissions. In other words, if the complexity of the source speech or other factors (e.g., speed, density of information) push demands beyond the available resources, then interpreters may 'fall off the tightrope', resulting in compromised performance. This is why interpreters must coordinate resources allocation effectively to avoid such an outcome.

However, the hypothesis has not gone unchallenged. In fact, much of the criticism of Gile's EMs stems from critiques of the hypothesis itself for several reasons, most notable of which is the lack of empirical evidence (Gumul, 2018).

Critics like Seeber and Kerzel (2012) conducted studies using pupillometry to measure cognitive load, finding that interpreters did not consistently operate

near cognitive saturation as Gile suggests. Their results indicated that cognitive effort was often lower than expected, which they interpreted as a refutation of the hypothesis. Gumul (2018), on the other hand, does not view the results as entirely disproving Gile's hypothesis, and questions the reliability of pupillometry testing in measuring cognitive overload. Furthermore, Gile (1999) corroborates his hypothesis with more research, including a study involving professional interpreters which demonstrated that errors and omissions can indeed occur for factors other than the difficulty of the source material. The interpreters who took part in the experiment were asked to interpret a speech twice, where it was found that they had committed errors the second time in segments that were interpreted correctly the first time, indicating that the errors are most likely related to an increase in cognitive load and thus reinforcing the hypothesis.

Cognitive Load management strategies

The EMs were primarily designed to explain the mental difficulties encountered by interpreters and propose didactic solutions for training. These difficulties are caused by what Gile (2021,p.144) calls "problem triggers" and gives examples for the most common ones:

- Speech-related triggers: and they include highly-technical or dense speeches, enumerations and long names (such as unfamiliar organization names).
- Speaker-related triggers: such as the speaker's accent or the inadequate use of SL in terms of tone, intonation and prosody.
- External triggers: like issues caused by external noise, poor equipment quality, inappropriate setting for SI or CI,…etc

When the interpreter experiences such triggers, processing capacity and time increase, possibly resulting in higher capacity requirements compared to the available processing capacity, which ultimately causes performance

deterioration. In order to deal with such cognitive constraints, interpreters could rely on various strategies. For instance, One effective strategy used to reduce cognitive load is anticipation, which Gile (2009, pp. 173-174) categorizes into two types. First, linguistic anticipation, through which the interpreter is able to predict upcoming linguistic elements based on the structure and semantics of the SL, thus reducing processing capacity required for speech comprehension. This type of anticipation is linked to the interpreter's SL proficiency and understanding of its grammatical and lexical norms. The second type, extralinguistic anticipation, refers to contextual knowledge that extends beyond language itself, including a good understanding of the subject matter, the speaker's background, cultural references or the specific situational context that inform what might be said next. For example, an interpreter might predict that a speaker will discuss a particular topic based on prior knowledge of the event or familiarity with the speaker's usual themes. This type of anticipation relies heavily on the interpreter's background knowledge and cognitive strategies rather than purely linguistic cues. Thorough preparation before assignments is also a key strategy to the success of the interpreting process, as a solid background and familiarity with the topics, terminology, speakers and related texts could help reduce cognitive load for comprehension and production Efforts significantly (Gile, 2021).

Taking actions to deal with cognitive overload is not limited to pre-assignment preparation only. Gile (2021, p.148) mentions a number of tactics that interpreters can apply during interpreting as well, including shortening speech segments when reformulating in the TL in order to alleviate some of the load put on WM, using abbreviations and symbols when note-taking in CI, avoiding a significant lag behind the speaker and using translation tools to facilitate the search for equivalents. Regarding the last point, recent technologies such as AI-enhanced CAI tools could prove very useful in helping the interpreter reduce cognitive load as they execute tasks such as speech recognition of names and

numbers, as well as instant translation of SL terminology and speech (Fantinuoli, 2023).

Automation of processes

Drawing from cognitive psychology, Gile (2023) identifies two types of operations involved in an interpreting task: automatic and controlled (or non-automatic) operations. Automatic operations are those which require minimal attentional resources and can be performed quickly and easily, while controlled operations demand more attention and concentration and are more challenging to execute. As discussed previously, Gile points to a number of non-automatic operations involved within the Efforts, where deliberate effortful actions are taken and mental energy is exerted in order to complete a given task. The more energy it takes to execute operations the more cognitive load is imposed on the interpreter's mind. To avoid this, Gile (2021) argues that the best way is to transform such operations into automated ones, particularly in the Reception and Production Efforts. This means that the two types of operations are not separate, and controlled operations can be rendered automatic with practice and repetition, although it is no easy feat and it takes a lot of time and targeted training to achieve (Gile, 2021). With enough repetition and practice, certain tasks will gradually demand less conscious effort which enables the interpreter to allocate his limited processing resources to other operations more efficiently. This progression toward automation reduces cognitive load, as automated operations minimize the strain on working memory.

This process has significant implications for interpreter training, as it directly impacts the allocation of cognitive resources and the management of the Efforts. For instance, the Listening and Analysis Effort requires significant cognitive resources, especially when dealing with fast speech, accents, or complex terminology. Automating parts of this effort (e.g., recognizing common structures or terminology) allows interpreters to focus on deeper comprehension

and meaning extraction. To this end, trainees could practice listening to and analyzing speech in their working languages until these processes become more automatic. For the Production Effort, certain aspects of production such as grammar, syntax, and common expressions could be automated to allow interpreters to focus on stylistic and cultural nuances. To achieve this, training could include practicing the production of target-language output until it becomes more automatic, allowing trainees to focus more on fluency, accuracy, and appropriate register.

Overall, Gile's Effort Models have made a significant impact on interpreting process research. By breaking down the cognitive demands of interpreting into distinct efforts, he provided a framework that has shaped both theoretical understanding and practical training in the field. By identifying specific efforts, the models provided researchers with a common language and framework to study interpreting. This has facilitated more systematic and detailed investigations into the cognitive load and resource allocation during interpreting. Additionally, the models inspired numerous empirical studies on interpreting, with researchers using the Effort Models to explore the nature of interpreting and the cognitive processes involved (e.g., Christoffels, & de Groot, 2005; Gumul, 2018), as well as design experiments that measure the impact of numerous variables on interpreting performance such as speech rate (Vancura, 2013), text complexity (Shen et al., 2023), and pre-task preparation (Yang & Mu, 2024). This has led to a more evidence-based understanding of interpreting. Finally, the biggest contribution of the models is their impact on interpreter training, as it highlights the need for targeted practice and skill development. As a result, interpreter training has increasingly become focused on the incorporation of targeted exercises aimed at the optimization of sub-tasks involved in each Effort such as active listening, information retention, speech segmentation and paraphrasing (Riccardi, 2005; Setton & Dawrant, 2016a).

As for their limitations, while his models are sometimes criticized for neglecting certain theoretical aspects, Gile (2021) reaffirms that the design of the models was first and foremost intended for pedagogical purposes stemming from his desire to simplify the conceptual cognitive notions of the process to interpreting trainees in order to equip them with enough knowledge to understand and overcome the difficulties they encounter.

A more theoretical exploration of the cognitive processes with an emphasis on cognitive load can be found in Seeber's Cognitive Load Model.

1.3.3 Seeber's Cognitive Load Models

In an attempt to investigate and measure cognitive load experienced during SI between structurally asymmetrical languages (English and German), Seeber (2011) developed his Analytical Cognitive Load Models (CLMs), drawing on insights from cognitive psychology and psycholinguistics. The models are part of his Cognitive Load Theory (CLT), which similarly to Gile's models, posits that the human brain has a limited capacity for processing information. In fact, Seeber (2011) initially drew inspiration from Gile's Effort models in his elaboration of CLT, with the same purpose to explore the cognitive processes involved in SI but with some significant differences that we will get into.

Working memory in CLT

Consistent with most cognitive processing models, Seeber (2011) describes WM as system of limited capacity (p. 177), only able to execute a small number of operations simultaneously and process a limited amount of information at a time. Through practice and the acquisition of expertise, one can learn to use WM more efficiently in a way that allows them to manage larger chunks of information more effectively (Seeber, 2011). This is particularly relevant in SI, where skilled interpreters develop strategies to handle high cognitive demands.

Cognitive load in SI

Seeber's models focus primarily on measuring the cognitive workload that results from interpreting between structurally different languages. The overlap of language comprehension and production operations in SI is by itself a complex and demanding task. When coupled with other elements of the process of SI that require cognitive processing, such as information density, self-regulation, word omissions and complex sentence structures, the process becomes even more challenging and cognitively-demanding. Seeber (2011) calls these elements "language-specific" "limiting factors", which he believes increase processing load and affect language comprehension and language production significantly (p.186).

The difference between Seeber's and Gile's thoughts on cognitive workload is that Seeber's models address the interferences between interpreting sub-tasks based on Wickens' multiple resource theory (Albl-Mikasa et al., 2020). Put more simply, Kahneman's single resource theory which Gile relies on in his models posits that cognitive tasks use one pool of mental resources, which is similar to having one single 'battery' that powers all the mental tasks. If a person does two things at once (like writing an essay while listening to music), they both take energy from the same battery, and the more tasks are performed the harder it gets because they would all be competing for the same limited energy. Wickens' theory, on the other hand, suggests that the brain has *multiple batteries* that power different types of tasks. For example, one battery is used for listening and seeing (perception), one for thinking and remembering (working memory) and another one for speaking and writing (production). According to this, Seeber's (2011) models postulate that the tasks performed by the interpreter clash more if they use the same battery. For instance, the cognitive load would be higher if the interpreter has to analyze speech segments while maintaining details in memory than if he is to listen to a well-structured speech with

predictable terminology while rendering it in the TL. In the former case, both tasks- analysis and memory retention- rely on the same 'thinking/remembering' battery, leading to significant resource competition. In contrast, when the speech is well-structured and predictable, the cognitive load is reduced because less effort is required for memory retention and semantic processing, allowing the interpreter to focus more effectively on producing the output.

Measuring cognitive load

Using a "conflict matrix" (Seeber, 2011, p.188), Seeber attempts to measure the amount to which different tasks interfere with one another due to overlapping resource demands. For this purpose, the interpreting tasks are divided into vectors, including Perception (P), Cognitive processing (C) and Response (S). Interference occurs when two tasks require the same cognitive resource, and this Interference (I) is measured and added as a "conflict coefficient" to the total cognitive load (Seeber, 2011: 187). Additionally, a Storage component (S) is added along with language comprehension tasks to account for the cognitive load which results from keeping information in WM before it is processed or produced. The findings from the matrix show that tasks with the highest interference typically involve auditory-verbal processing, such as listening to the input while simultaneously producing the output. Cognitive-verbal tasks like understanding and reformulating speech also show significant interference. Finally, the overall cognitive load is calculated by summing the demand vectors (individual task loads) and the conflict coefficients (interference between overlapping tasks). To measure cognitive load, Seeber & Kerzel (2012) used pupillometry, a psycho-physiological tool which measures cognitive load based on pupil dilation in response to simultaneous interpreting tasks. The results indicated an increase in cognitive load when interpreting from a verb-final language (German) into a verb-initial language (English) (Seeber, 2013),

corroborating Seeber's hypothesis on increased cognitive load in SI between syntactically asymmetrical languages.

Implications for Interpreting Research

Seeber's models help explain why SI, a practice which involves multiple demanding tasks that often overlap in their use of resources, is mentally exhausting. Moreover, the model offers a quantitative framework that highlights particular high-conflict areas, making it easier to identify the tasks with the most cognitive load and therefore figure out strategies to reduce interference amongst them. For interpreter training, this means practice could focus on tasks that cause the most interference, including the application of the strategies shown to be commonly used by interpreters in the case of structurally different languages, namely: anticipation, waiting, stalling and chunking (Seeber, 2011,p.193). Finally, the models present psycho-physiological measurements as potentially effective and objective methods for quantifying cognitive load in SI.

With regards to the limitations of the models, the validity of the measurements used for the models has yet to be fully assessed, as Seeber (2013) himself acknowledges the difficulty of measuring cognitive load accurately using methods such as pupillometry, which is mostly effective with certain tasks that involve short sentences but shows less accuracy with longer speech segments. Nonetheless, Seeber's model lays the groundwork for ongoing research into cognitive load in interpreting; prompting more process-oriented studies that investigate different elements that affect cognitive load during SI such as the incorporation of CAI tools (Prandi, 2017).

1.4 The Significance of Interpreting Process Models

Understanding *how* something works allows us to learn how to do it better and more efficiently, and this is evident in the immense contributions of process-oriented research to interpreter training. In this regard, while these models were

primarily intended for the purpose of understanding the interpreting process, their relevance has extended to include other profession-related areas such as interpreting quality assessment and interpreter education. Each process model deals with a particular issue and challenges certain notions in the other models. For instance, Mizuno disagrees with Gile's idea that each effort acquires load and argues that cognitive overload happens at the level of working memory, but agrees with his idea of imported load. Gile and Seeber's models also have opposing ideas, the main being the source of cognitive resources and the methods for investigating cognitive load, with Gile adopting an analytical approach (relying mainly on introspection) and Seeber a psycho-physiological one (the use of pupillometry and eye-tracking measurements). One thing which all models agree on, however, is the fact that cognitive constraints are indeed a common problem caused by the failure to coordinate and organize effort distribution efficiently, and that proper training that targets these areas is needed.

1.5 Conclusion

To conclude, the process models presented here have had a significant impact not only on our understanding of the psychological and cognitive nature of the interpreting process, but on our view of skill development for interpreter training as well, which is our main interest and the topic of the following chapter. For a more comprehensive overview of cognitive process models for interpreting, see Pöchhacker (2008) and Setton (2015).

Chapter Two:

Process-oriented Interpreter Training

2 Introduction

The previous chapter illustrated how research into interpreting shifted from linguistic and product-oriented approaches to more process-oriented approaches with a focus on cognition and mental operations. This shift has had its implications for interpreter training, which similarly adopted a cognitive approach based on the acquisition of skills involved in the interpreting process. In this chapter, we will attempt to draw an overview of the current didactic trends that emerged as a result of process-oriented research, and discuss the practical applications of such approaches particularly in terms of skill development for interpreter training.

2.1 From Theory to Practice: The Development of Interpreting Didactics

The history of the didactics of interpreting is closely tied to the establishment of conference interpreting as a profession in the mid-1940s. The need for professional interpreters first began after World War I and the establishment of the League of Nations, where consecutive interpreting became the main mode. This need then grew exponentially after World War II and the Nuremberg trials, after which simultaneous interpreting became the dominant mode. Early training programs appeared at this time at a number of schools across a few countries such asthe Moscow Linguistic University, Heidelberg University, Ecole d'interprètes de Genève (EIG)- now known as Faculté de Traduction et d'Interprétation (FTI)- and École supérieure d'interprètes et de traducteurs (ESIT) (Kelly, 2005, p.8). In 1960, the *Conférence Internationale Permanente d'Instituts Universitaires de Traducteurs et d'Interprètes* (CIUTI) was founded, considered to be the world's oldest international association of university institutes offering translation and interpretation programs. The organization aims to promote high-quality translation and interpreting programs by setting up strict training criteria (CIUTI, n.d.).Comprising member universities and institutes

from all over the world, CIUTI's main objective is to safeguard and ensure high-quality training courses in translation and interpreting. Its strict and selective admission requirements are a testament to its commitment to the development of first-rate training methodologies and didactic approaches, overseeing every detail from laboratories, equipment and resources, all the way to course content, interpreting exams and graduation theses (Schmitt, 2012,p.31).However, compared to other disciplines like foreign languages, translation and interpreting emerged as a discipline only recently and did not develop a didactics of its own. There had been a few individual works and student handbooks published for didactic purposes, such as *The Interpreter's Handbook*, where Herbert (1952) considers interpreting as a process of three distinct operations (understanding, transference and speaking), and offers instructions on how to train for each one of them. In 1956, Rozan published his book titled *La Prise de Notes en Interprétation Consécutive* (Rozan, 1956), introducing seven main principles for note-taking in consecutive interpreting. Herbert's and Rozan's ideas have also been at the heart of Van Hoof's (1962) *Théorie et pratique de l'interprétation*, which tackled key elements of consecutive and simultaneous interpreting, albeit theoretically and lacking empirical backing (Gile, 1995a).Yet, these works were few in number and lacked the systematic rigor necessary to serve as comprehensive pedagogical tools or to establish a structured approach for teaching interpreting. A few decades later, with the emergence of new approaches in translation and interpreting research, Delisle (1980) advocated for a reevaluation and re-conceptualization of systematic methodologies for T&I training which extend beyond program content, duration and admission requirements (Hurtado Albir, 2019). The same needed to apply to interpreter training, which required a clear, structured methodology that actively involves trainees in the learning process and achieves the predetermined learning objectives and outcomes. One of the earliest and most significant endeavors in this regard was Seleskovitch and Lederer's extensive work on interpreter

training methodology. Their books *Interpréter pour Traduire* (1984) and *Pédagogie Raisonnée de l'Interprétation* (1989) have had a profound impact on the field of interpreter training, laying the foundation for a structured methodology based on the principles of the ITT and process-oriented research. Their work emphasized the importance of moving beyond ad hoc methods and focusing instead on systematic principles derived from extensive classroom observations and practical experience. Their approach was therefore designed to help trainees understand the interpreting process and develop the cognitive and linguistic skills necessary for effective interpreting such as deverbalization, memory, note-taking in consecutive interpreting, and reformulation.

In their attempt to present an integrated theory of translation, Neubert & Shreve (1992) discussed different translation models that outline the various approaches to the practice. Of the seven models presented, they suggest that the Psycholinguistic Model is the one "concerned with describing the cognitive aspects of the translation process" (p. 30), a framework which was primarily developed to adjust teaching methodologies in a way which takes into account the cognitive challenges inherent in translation. Kiraly (1995) proposed a process and competence-based pedagogical model for translation (and interpreting), encompassing three main areas: (1) a multidisciplinary theoretical foundation informed by linguistics, psychology, psycholinguistics, sociolinguistics, sociology, anthropology, second language education and translation theory, (2) a methodology based on a set of rules for the systematic acquisition of translation processes and competences and (3) a practical implementation of this theory within the translation classroom (pp.37-38).More specifically, Kiraly's model examines the translation and interpreting processes relevant to translation education from a social viewpoint (which frames the interpreter as a communication agent within a social context) and a cognitive one (taking into consideration the mental operations involved in the translation

process). This combination should serve to develop a translation pedagogy that "understand[s] how the context of situation is processed and competences of several kinds brought to bear in text comprehension and production" (Kiraly, 1995,p.63). This approach is relevant to interpreting education because it takes the findings of the theoretical models discussed previously on the cognitive operations involved in the interpreting process and integrates them within the social and communicative context of the practice highlighted at the beginning.

Ultimately, Kiraly (1995) concluded that an integrated psycholinguistic model of the processes involved in translation (similar to the models discussed previously that combine source text comprehension, target text production and the mental processes involved in between), and social model which promotes the translator's ability to recognize and adapt to the specific context and expectations of a translation task (such as the purpose, audience, cultural and situational factors that influence the translation or interpreting process)could be very insightful for translation and interpreting pedagogy. He provides six recommendations or *principles* to initiate the development of a translation pedagogy, which according to him should focus on enhancing trainees' *intuitive skills* for text comprehension through situational context, teaching them to develop *conscious strategies* that are necessary for problem-solving, but most importantly, understanding the relationship and interaction between the two when performing any given translational activity.He also highlights the importance of situated and experiential learning -which replicate real-world translation scenarios in the classroom- in building translation competence, and calls for training students to develop a professional mindset and an internal ability to check for quality which would help them spot errors, evaluate their work and resolve issues. Finally, instruction should focus on quality beyond just "correct" translation, aiming for products that meet professional standards, and this could be achieved through a structured curriculum that systematically

progresses from intuitive bilingual skills to more advanced and specialized professional techniques (Kiraly, 1995, pp.110-112).

By the turn of the new millennium, advances in interdisciplinary research had impacted process-oriented interpreting research and helped launch a more systematic approach to teaching and training interpreters. This was the result of the increase in empirical research in interpreting -although it remains scarce compared to research into written translation. Yet, the numerous volumes and studies which appeared sought to expand knowledge on the latest approaches to interpreting training. For instance, the *Interpreter Education Series* which appeared in 2000 has influenced the didactics of interpreting greatly by encouraging interdisciplinary research, promoting evidence-based practices and addressing evolving pedagogical needs. This is evident in the various works that aim at bridging the gap between theoretical frameworks and practical training (Bowen-Bailey, 2006; Harrelson, Marks, & Chan, 2018), enhancing teaching methodologies and curriculum design by integrating innovative, modern approaches (Metzger, 2000; Angelelli, 2006; Napier, 2006; Sawyer, 2006; Fitzmaurice, 2018), and advocating for improved interpreter training that promotes professional experience and meets professional standards, technological advancements and community demands (Humphrey, 2000; Slatyer, 2006; Shaw, 2013; Braun, Slater & Botfield, 2015).

Other notable initiatives include the CIRIN Bulletin discussed in the previous chapter, as well as The Interpreter and Translator Trainer (ITT), a journal established in 2007, and the International Journal of Interpreter Education (IJIE), which was founded in 2009. These initiatives collectively contribute to the advancement of interpreting didactics by providing educators, researchers and practitioners with valuable resources for curriculum design and assessment methods, evidence-based research on the latest training methodologies, and a

platform for sharing best practices and fostering collaboration among educators from around the globe.

2.1.1 Research Implications for Skill Development

When reflecting on the needs and limitations of translation didactics, Delisle (1980) posed a series of questions, two of which were: *what fundamental skills, beyond linguistic ones, are required to achieve proper translation? And how could these skills be developed?* (p.15). The same questions could be asked about interpreting didactics: Beyond linguistic competence, what other fundamental skills are essential for successful interpreting, particularly within the framework of process-oriented interpreting studies? And how can these skills be most effectively taught to interpreters?

First of all, a major point which needs to be established is that language proficiency as well as cultural and contextual knowledge –or extra-linguistic competence- are basic prerequisites to pursuing interpreting training. While extra-linguistic competence can be developed and expanded with time and in parallel with interpreting practice, linguistic competence at the very least is a given in this field as emphasized by scholars such as Seleskovitch & Lederer (1989), who emphasize that candidates must demonstrate full proficiency in their A language, including the ability to express themselves effectively and appropriately adapt to different language registers. Those who lack these skills, as well as sufficient cultural knowledge, should not be admitted. Regarding B languages, candidates must possess the ability to fully comprehend spoken content, including the topic, context, accent, and the speaker's pace of delivery. As the recognition of the complex mental processes involved in interpreting grew and became accepted among scholars, interpreter training shifted towards more cognitive and psycholinguistic approaches, informed by the latest findings in process-oriented research. Such approaches emphasized the development of cognitive skills critical for effective interpreting, as was implied by all of the frameworks and models discussed up to this point. Mizuno, Gile, Seeber and

Kiraly all came to the conclusion that targeted training with an emphasis on mental operations was necessary for enhancing performance and solving cognitive problems. Thus, several studies drawing from such interpreting process models highlighted different skills and methods for their development.

Skills, Competences and Expertise

Before delving into the main skills essential for interpreting, it is crucial that we first distinguish between *skill*, *competence* and *expertise*.

Competence can be defined as "a set of skills needed for high performance in a certain field" (Grbić & Pöchhacker, 2015,p.69). From this definition, we can deduce that competence is a broad concept that involves a number of skills. Not only that, it also encompasses knowledge, attitudes, and the ability to apply these in complex real-world situations. This is highlighted by Weinert (2001)who describes competencies as "cognitive abilities and skills" which include "all of an individual's mental resources that are used to master demanding tasks in different content domains, to acquire necessary declarative and procedural knowledge, and to achieve good performance" (p.46).In education, this means that competence involves not only knowing facts or performing tasks, but also understanding when and how to apply knowledge and skills. On a smaller scale, Proctor & Dutta (1995) define skills as behaviors that "require coordinated processes of perception, cognition, and action" This is true for both actions as simple as reading or driving, to more complex and “specialized” actions such as manipulating machines or solving mathematical problems (Proctor & Dutta, 1995, p.1).The ability to perform such specific tasks or actions effectively is often acquired through training, practice or experience.

There are many types and categories of competences depending on the context and field. In the context of language learning and language use, the *Common European Framework of Reference for Languages* (CEFR) distinguishes between two main categories of competence, each comprising more sub-

categories: *general competences* (consisting of declarative knowledge, skills and know-how, existential competence, and the ability to learn) and *communicative language competences* (consisting of linguistic competence, sociolinguistic competence, and pragmatic competence) (Martyniuk, 2006). A language user -in our case, the interpreter- makes use of these competences as convenient in order to perform different tasks, one of which is *mediation*, i.e. interpreting. In interpreting education, competence has been a topic of interest to process research and interpreter training, leading to the introduction of a number of interpreting competence models. Pöchhacker (2004) defines competence in interpreting as the alignment between task demands, and the interpreter's qualifications that allow him to fulfill such demands. For this purpose, he distinguishes between two main kinds of interpreter competence:

- Personal qualities and abilities: these involve a combination of cognitive, moral and physical qualities such as intelligence, memory, emotional maturity and ethical integrity, and specific qualities such as language proficiency, cultural competence and interpersonal skills may be prioritized depending on the interpreting setting (e.g., conference, court, liaison, and sign language interpreting...)
- Special skills and expertise: these involve bilingual skills and the basic ability to translate, followed by the acquisition of expertise, which involves the development of advanced cognitive processes and specialized strategies that become automatic over time.

Research on expertise in cognitive psychology has explored how these skills develop through training and real-world experience. In interpreter training, studies comparing expert and novice interpreters emphasize the importance of task-specific skills, such as selective processing and efficient memory allocation rather than discrete cognitive abilities. Expertise also encompasses interactional skills, strategies for knowledge acquisition and the use of technology

(Pöchhacker, 2004).On this topic, Ghiselli (2021) states that "interpreting expertise is not a natural ability but a hard earned result achieved by individuals with an aptitude for interpreting and thanks to targeted and constant effort" (p.3).In this sense, evolving from a beginner trainee to a skilled and well-trained expert requires the development and enhancement of skills through targeted and rigorous training.In interpreting tasks, and in line with the process models explored earlier, this means acquiring the ability to deal with cognitive constraints and the load resulting from the operations involved in interpreting. As Ghiselli (2021) puts it, "the process of skill acquisition involves the decline of cognitive load from novice attention-demanding processing to skilled automatic processing" (Ghiselli, 2021, p.5). The idea is to take a process or an operation which demands effort and causes cognitive strain and automate it, render it effortless, which goes back to Gile's notions on automated vs. controlled operations. In cognitive psychology, this is achieved through three main stages of skill acquisition as illustrated by Anderson (1995), which can be summarized as follows:

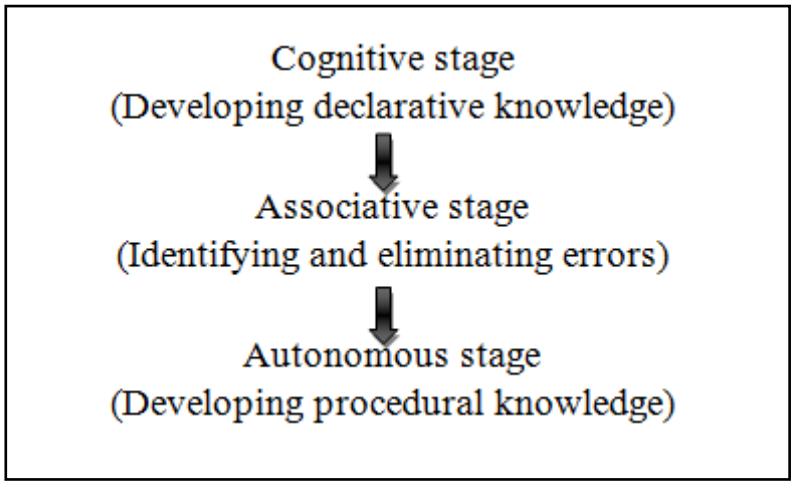


Figure 3: *Stages of skill acquisition according to Anderson (1995)*

To break it down, we can compare interpreting training to learning to drive. At first, the instructor shows you how to switch gears, and when you first try it, you may have to look down in order to do it, which affects the overall process and interferes with other operations you must execute, leading to errors and mishaps.

Through time, you attempt to recognize ways to do it without looking by developing *a feel for it*. With enough training, the process becomes automatic and second-nature, allowing you to focus on harder and more important tasks. Likewise, when interpreting, the interpreter has a handful of tasks to coordinate and execute, and therefore has to make sure he renders automatic the maximum of processes in order to allocate much needed attention and effort to the more demanding tasks. Ultimately, listening, analyzing, summarizing information and recalling must become procedural and instant, allowing the interpreter to put more efforts towards reconstructing meaning and delivering it properly.

2.1.2 Models of Interpreting Competence

In order to identify the skills in question, a number of interpreting competence models were introduced. Pöchhacker (2000) presented a multidimensional model which showcased the intricate nature of interpreter competence, encompassing a wide range of skills, knowledge and abilities essential for effective interpreting. The model integrates linguistic, cultural, cognitive, social and professional dimensions, all of which reflect the multifaceted demands of the interpreting process. At its core, Pöchhacker emphasizes the linguistic transfer competence as the foundational competence –representing the ability to accurately and efficiently transfer meaning from the SL to the TL in real-time-, which is supported by cultural competence, and interaction management skills (the interpreter's ability to facilitate smooth and effective communication between speakers). These are further reinforced by professional performance skills and ethical behavior. Embedded within these competences are critical interpreting skills, such as language and cultural skills, translational skills, and subject-matter knowledge (Grbić &Pöchhacker, 2015). Although not explicitly stated as a competence, cognitive skills can be interpreted as being integrated within the linguistic, cultural and translational skills that enable the interpreter to comprehend and convey the message accurately and effectively by means of the mental operations involved in this process.

A more extensive model was proposed by Albl-Mikasa (2012), building on Kalina's (2002) interpreting process model. Drawing on a study involving experienced professional interpreters, Albl-Mikasa identified five skill areas rooted in the process dimensions outlined in Kalina's model. While Kalina originally proposed four dimensions, Albl-Mikasa (2012) introduced a fifth (the para-process dimension), with each area encompassing its own set of sub-skills:

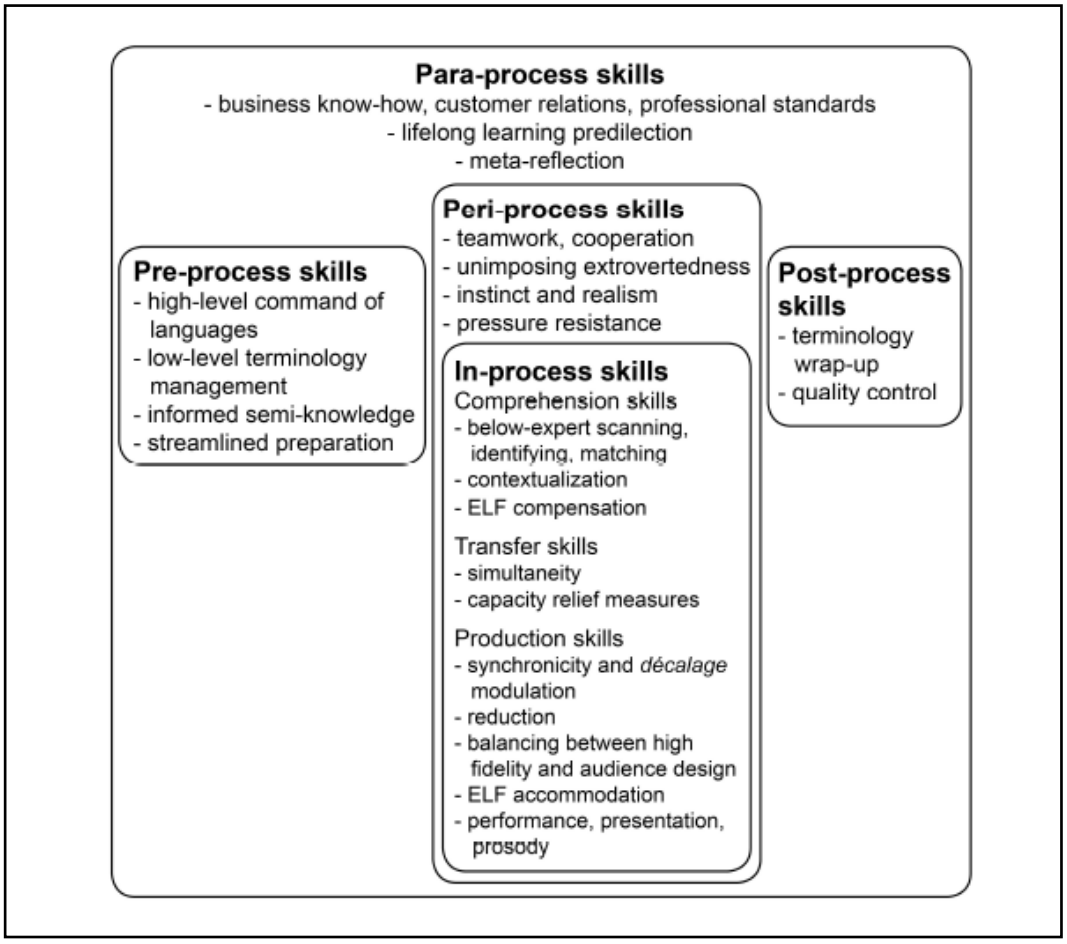


Figure 4: *Albl-Mikasa's (2012) Process- and experienced-based model of interpreter competence*

(*Note*. From "The importance of being not too earnest: a process- and experience-based model of interpreter competence", By, Albl-Mikasa, M. In. In B. Ahrens, M. Albl-Mikasa, & C. Sasse (Eds.), *Dolmetschqualität in Praxis, Lehre und Forschung: Festschrift für Sylvia Kalina* .(pp. 59–92). 2012. p.63.

The model is comprehensive and takes into account the various aspects of the interpreting practice. In the context of our research, we would like to highlight in-process skills, as they are the most relevant to the theoretical process frameworks concerned with interpreter training and include skills that the interpreter employs during the act of interpreting. The three skill categories include the following sub-skills:

- **Comprehension skills:**
- *Below-expert scanning, identifying, and matching:* Interpreters must quickly identify and understand key information in the source language, even without deep subject matter expertise.
- *Contextualization*: Grasping the situational context, cultural nuances, and speaker intent to convey accurate meanings.
- *English as a Lingua Franca (*ELF*) compensation*: Navigating various accents, grammatical structures, and potential misunderstandings when English is used as a common language among non-native speakers.
- **Transfer Skills:**
- *Simultaneity*: Listening to the source language and simultaneously interpreting it into the target language.
- *Capacity relief measures:* Employing strategies to manage cognitive load, such as chunking information or anticipation techniques.
- **Production Skills:**
- *Synchronicity and décalage modulation*: Managing the time lag between hearing the source message and delivering the interpretation, aligning with the speaker's pace.
- *Reduction*: Compressing dense or complex information without losing essential meaning.

- *Balancing act between high fidelity and audience design*: Maintaining the original message's accuracy while tailoring it to the audience's cultural and linguistic context.
- *ELF accommodation*: Adjusting language use to accommodate varying proficiency levels when interpreting into or from English as a Lingua Franca.
- *Performance, presentation, prosody*: Delivering the message with appropriate tone, intonation, and body language to enhance clarity and impact.

By delineating the diverse skills required at various stages of the interpreting process, Albl-Mikasa's model provides a structured approach to cultivating the different competencies essential for professional interpreters. This comprehensive framework, when applied in educational settings, has the potential to greatly improve interpreter training and advance skill development.

2.1.3 Cognitive Aptitude Models

Building on the framework provided by competence models which examine interpreter-specific abilities, research has increasingly turned toward cognitive aptitude models to explore the underlying mental capacities that support these competences. While competence models detail what interpreters must do at the various stages of the interpreting process, cognitive aptitude models delve into the cognitive resources- such as working memory, attentional control, and processing speed- that enable interpreters to manage the real-time demands of their task. In other words, competence models indicate which competences and skills are required for interpreting, while cognitive aptitude models show us which mental operations we should target and enhance in order to acquire said abilities- for instance, how to improve language processing and analysis to successfully infer meaning in the SL, or enhance working memory to allow for effective chunking and speech segmentation.

Macnamara (2012) introduced a model for *Interpreter Cognitive Aptitudes*, in which she explored the cognitive faculties essential for successful interpreting, particularly in sign language. The model examines the variability in interpreting students' abilities and proposes a theoretical framework for interpreter aptitude, which she emphasizes is necessary in order to improve interpreter education and assessment. Macnamara (2012) argues that a theoretical model of interpreter cognitive aptitudes can help identify necessary foundational abilities and guide future aptitude testing. In her framework, she categorizes interpreter aptitudes into major and sub-domains. These domains outline the cognitive faculties required for effective interpreting, and include four main categories: Social-Cognitive Aptitudes, Intellectual Aptitudes, Cognitive Skills and Cognitive Capacities (Processing Ability), and Second Language Learning Aptitudes (Macnamara, 2012). Our interest lies with the cognitive skills and capacities which make up the processing abilities as shown in **Figure 5.** This category refers to the cognitive skills and capacities required to handle the complex, real-time demands of interpreting, integrating various executive functions, memory processes, and multitasking abilities to ensure efficient language comprehension, translation, and expression.

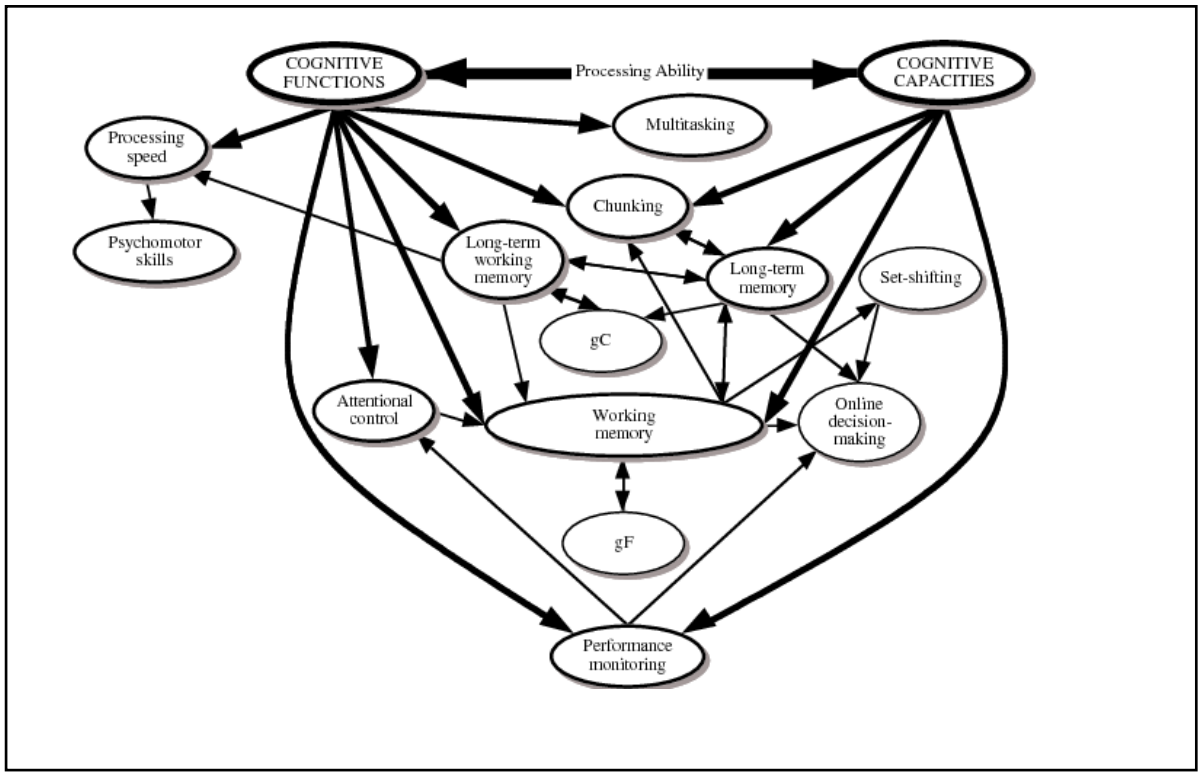


Figure 5: *Processing Ability in Macnamara's (2012) Interpreter Cognitive Aptitudes model*

(*Note*.From "Interpreter cognitive aptitudes", By Macnamara, B. 2012.Interpreter cognitive aptitudes. *Journal of Interpretation, 19*(1), Article 1. https://digitalcommons.unf.edu/joi/vol19/iss1/1. p.16).

Processing abilities are divided into two subcategories: **Cognitive Functions,** and **Cognitive Capacities**. **Table 3** categorizes the sub-skills within this domain, providing definitions and outlining the role of each skill in the interpreting process. This presentation of processing abilities highlights the critical role of both **cognitive functions** (dynamic skills) and **cognitive capacities** (fundamental resources) in successful interpreting.

Cognitive functions, such as performance monitoring, attentional control, and online decision-making, enable interpreters to manage real-time processing demands, adapt to unexpected challenges, and maintain accuracy under pressure. Meanwhile, cognitive capacities, including working memory, processing speed, and chunking, provide the foundational resources necessary to handle complex linguistic tasks efficiently.

Table 3: *Processing Abilities in Interpreter Cognitive Aptitudes (Macnamara, 2012)*

Sub-Category	Skill/Capacity	Definition	Role in Interpreting
Cognitive Functions	Performance Monitoring and Regulation	The ability to assess and adjust one's interpreting process in real-time.	Ensures effective and accurate interpreting through self-awareness and self-regulation, minimizing distortions caused by subconscious biases or cognitive overload.
	Attentional Control	The ability to consciously allocate mental effort, focusing on relevant information while filtering out distractions.	Helps maintain focus, filter out distractions and manage multiple cognitive skills simultaneously, ensuring accurate and efficient interpreting.
	Multitasking	The ability to manage multiple cognitive tasks simultaneously.	Enables the handling of multiple overlapping cognitive tasks efficiently, strategically redirecting attention as needed.
	Online Decision-Making	The ability to make rapid, high-stakes choices in real-time.	Helps assess available information and predict potential outcomes, making strategic decisions accordingly
	Set Shifting	The ability flexibly change approaches or strategies when faced with new information, challenges or feedback.	Allows adaptation to new information in real-time to ensure greater accuracy, clarity and audience comprehension.
Cognitive Capacities	Working Memory	The ability to actively manage multiple linguistic and cognitive tasks simultaneously.	Crucial for retaining, processing, and retrieving information efficiently, while also enabling processes like reasoning and problem-solving.
	Chunking	Grouping information into meaningful units to optimize working memory capacity.	Enables the processing of larger units of meaning, reducing cognitive load to allow for more capacity for other cognitive tasks.
	Processing Speed and Depth	The speed and levels at which the interpreter retrieves, analyzes and comprehends information.	Enables better and faster comprehension and retention, reducing cognitive load and enhancing interpreting proficiency.

From this model and the overall aptitudes model, we can observe that certain elements can be both a capacity and a skill (such as working memory and performance monitoring), as well as pertaining to multiple major domains. This also points to the idea that these skills and capacities are not isolated or independent, but rather closely-tied and interactive.

Furthermore, Macnamara's research underscores that interpreters with stronger cognitive abilities—particularly in areas like working memory and attentional control—tend to perform better in high-stakes interpreting scenarios. These findings have significant implications for interpreter training and selection, suggesting that programs should focus on developing both dynamic skills and underlying cognitive resources. Additionally, they emphasize the importance of individual differences in cognitive aptitudes, which may explain variations in interpreter performance. By understanding and targeting these cognitive abilities, educators and trainers can better prepare interpreters for the demands of the profession, ultimately improving the quality and reliability of interpreting outcomes.

Han, Wen, Lin & Li (2023) also discussed cognitive aptitudes as part of their comprehensive translation and interpreting aptitude model drawing from the Translanguaging theory. The *3M model* comprises three major levels or domains: Micro Multicompetence (the translator/interpreter's skills and mental processes), Meso Multimodality (interaction with external tools) and Macro Multilingualism (interaction with the social-cultural environment) (Han & al., 2023,p.332). Cognitive interpreting aptitude and basic skills lie within the Micro level. This multicompetence represents the core of this level and encompasses "all of the cognitive and mental capacities and processes the translator/interpreter brings to bear on his/her translating and interpreting behavior and performance" (Han & al., 2023, p.333).The model builds on Gile's Efforts Models as a basis for cognitive skills training through the main stages (i.e. Efforts) of the interpreting process, as well as the number of empirical

studies on the mental processes involved, which include problem-solving, attention control, working memory, and executive functions such as updating, shifting and inhibition. A successful and efficient coordination and execution of these skills and mental processes could eventually lead to what the authors call "*liminal moments"*(Han & al., 2023, p.336), referring to the creative and critical instances where interpreting occurs smoothly and interpreters encounter no significant cognitive load.

Overall, the Micro level of the 3M translation and interpreting aptitude model combines the ensemble of the cognitive skills and capacities inherent to the process, the interpreter's multi-linguistic proficiency, executive control as well as psycholinguistic factors such as anxiety, stress and emotions. These components represent the foundation of the interpreting process and are indispensible to interpreter training, as they are crucial for attaining the overall levels of aptitude essential to the interpreting practice.

To sum up, as an extension of competence models, cognitive aptitude models offer a more granular understanding of the cognitive resources and skills inherent to interpreting, as well as an explanation of why certain individuals excel in interpreting. In effect, cognitive aptitude models not only account for variations in interpreter performance but also provide a theoretical basis for developing targeted training and assessment methods. These components represent the cognitive underpinnings crucial for achieving high-quality interpreting and efficient training, and should therefore be the focus of interpreter education and assessment.

2.2 Educational Approaches in Interpreter Training

The models and frameworks that emerged as a result of Cognitive Translation and Interpreting Studies (CTIS; Xiao & Muñoz Martín, 2020) refuted the previously upheld idea that interpreters were born with the talent and skill for interpreting (Kalina, 2000). Although individual differences do exist as pointed

out by Macnamara (2012), skill acquisition and specialized training are also essential to succeed in the domain, which is why interpreter educational programs began incorporating cognitive skill development in their training. This shift marked a departure from the earlier interpreting instruction methods which relied largely on instructors' personal experiences, as exemplified by the approach of early practitioners such as Seleskovitch at ESIT. Although this approach of "apprenticeship" (Pöchhacker, 2004, p. 177) was innovative at the time, it was not grounded in scientific and pedagogical principles (Gile, 1990).The more recent approaches put an emphasis on the development of interpreting task-specific skills, and these included preliminary exercises for consecutive and simultaneous interpreting skills (Ilg & Lambert 1996, Gillies, 2013; Setton& Dawrant, 2016a, Gillies, 2017).

For instance, in terms of consecutive interpreting training, Ilg and Lambert (1996) called for a pragmatic approach designed to prepare interpreters to handle the different real-life scenarios they could encounter, such as variations in speech influenced by speech structures, speakers' delivery styles and choices, accents, and social and ideological backgrounds. This approach focuses on exercises aimed at improving comprehension and production skills, with particular emphasis on processing and analytical abilities, anticipation strategies, and note-taking techniques. The authors suggest that note-taking skills, in particular, should be introduced in the curriculum at later stages of training (Ilg & Lambert, 1996). They argue that students should first develop a solid foundation in linguistic transfer before initiating CI practice, starting instead with exercises such as sight translation, summarizing and expanding, as well as unilingual activities (Ilg and Lambert, 1996, p. 73). This enables them to develop the ability to understand and subsequently reconstruct meanings in the target language, after which the principles of consecutive interpreting can be introduced. The idea of a preparatory phase is also championed by Gile (1983), who outlines four main objectives of unilingual exercises at the beginning of CI

teaching: (1) highlighting the nature of the mental operations involved in interpreting, (2) raising students' awareness of the true challenges of interpreting as a special form of oral communication (as opposed to the technical or 'superficial' obstacles associated with its bilingual nature), (3) learning specific techniques (such as active listening and analysis), and (4) assessing students' mastery of the methods. Rakić (2019) also regards it as one of the most crucial stages in the process of acquiring interpreting skills, providing a solution to the problem of literal translation commonly observed among beginner trainees. He therefore grounds his work in the principles of the ITT and demonstrates a method for implementing exercises that emphasize meaning inference through in-depth analysis of transcribed speeches. Following this preparatory phase, training can progress to consecutive interpreting without notes, and subsequently to note-taking, where analysis, prioritization, and memorization of information are central to the process (Rakić, 2019).

Taking these views into consideration, it becomes evident that a shared consensus among these authors is that a preparatory phase is indispensable, particularly to equip trainees with foundational techniques for transferring meaning across languages, encompassing the intricate mental processes integral to such an operation.

On a similar note, and as discussed earlier, effective interpreter training necessitates a progression from declarative knowledge to procedural knowledge. To achieve this, Gran (1998) proposes a “gradual approach”(Forte, 2012, p. 117), inspired by Paradis's language learning model, emphasizing the step-by-step development of cognitive and linguistic skills. Similar to Gile's ideas (2021), this approach focuses on the automatization of processes, particularly in SI, whereby explicit knowledge- skills acquired through deliberate practice- is transformed into implicit competence, i.e., procedural knowledge where processes become fully autonomous. To operationalize this approach, Gran

(1998) suggests a structured framework for interpreter training courses, consisting of three key steps:

1. **Identifying the different components of the interpreting process:** breaking down the interpreting process into its constituent elements to provide a clear understanding of the skills involved
2. **Developing skills sequentially:** allowing students to focus on mastering one skill at a time. Gran (1998, p. 157) proposes four complementary exercises to enhance basic text analysis:

- Paraphrasing: rephrasing content in different words while maintaining original meaning.
- Semantic abstraction: simplifying language by replacing detailed descriptions with broader terms, prompting a focus on core meaning.
- Shared knowledge strategies: leveraging context and external knowledge to fill in missing information.
- Personal reformulation strategies: developing techniques to maintain cohesion through linguistic and paralinguistic tools.

3. **Integrating skills for full interpreting:** combining the acquired skills to perform complete interpreting tasks, while making use of implicit competence to address more challenging aspects of the process

Gran (1998) emphasizes that these steps must be supported by the proper use of materials (speeches) tailored to each training stage.

Most scholars generally agree on the need for a gradual progression in training, including the gradual increase in the difficulty of the materials used (Kurz, 1992; Gile 2005, Gillies, 2013; Setton & Dawrant, 2016b). For instance, it is widely accepted that prior to engaging in consecutive or simultaneous interpreting exercises, trainees should be made aware of the topic the speech. Additionally, the speech must not be too fast or densely packed with technical terminology and elements that could pose a difficulty such as numbers and/or unfamiliar names (Forte, 2012). This is to allow students to familiarize with the

interpreting process and the operations involved, rather than becoming fixated on the language, content and structure of the speech. As the process becomes more automatic and manageable, the speed, structure and content complexity of the speeches can be gradually increased in order to introduce challenges and cognitive load, enabling student to develop and test strategies to effectively overcome those difficulties.

A more thorough and practical approach can be found in Setton & Dawrant's *Complete Course* (2016a) and *Trainer's Guide* (2016b), which outline a comprehensive framework for interpreter training. This framework covers every aspect of the training process, including selection and admission criteria, classroom activities, theoretical foundations, materials, curriculum design, and assessment tools. For interpreting skills training, Setton & Dawrant (2016b) stress on the importance of fostering a student-centered learning environment. This approach encourages trainees to actively engage in their learning. In this context, the instructor assumes the role of "'a facilitator', choosing materials and exercises, judging the pace of the class and the individual, simulating conditions still unknown to the students, and setting objectives and expectations." (Setton & Dawrant, 2016b,p.28).Most importantly, the instructor's role involves providing constructive feedback, monitoring students' performances and offering guidance and strategies for improvement. This is a challenging task, as teaching skills tied to mental processes involves explaining concepts that are intangible and difficult to visualize. To address this, the authors suggest that a combination of methods- such as clear explanations, practical demonstrations, the use of appropriate materials, and coaching (including instant feedback and interruptions)- can help students better understand the mental operations involved in interpreting. This approach not only clarifies these processes but also fosters the development of autonomous competence. In practice, the learner progresses through four primary stages in order to master each skill: Initiation (Discovery), Coordination, Experimentation and Consolidation (Setton &

Dawrant, 2016b, p.xxx).During the **Initiation** and **Coordination** stages, texts and speeches should typically be selected to challenge students on just one specific aspect of the task, while keeping all other parameters simple. In Coordination, students are gradually introduced to full interpreting tasks using simplified, well-structured speeches delivered by the instructor.In **Experimentation**, students transition to more authentic, progressively challenging materials, incorporating real-life complexities like faster delivery and varied subject matter. Finally, in the **Consolidation** stage, students work solely with authentic materials, using real recordings of speeches rather than those read by an instructor. These recordings capture the genuine, unfiltered quality of real-world speech, providing the most realistic practice for professional interpreting. This step-by-step method ensures students build skills progressively while adapting to increasing levels of difficulty and realism. The authors call this approach *incremental realism* (Setton & Dawrant, 2016b, p.10), which also allows for some flexibility to accommodate students advancing at varying paces

Another approach worth investigating is the social constructivist approach. Originally developed by Kiraly (2000) for translation education, this approach seeks to foster a learning environment that encourages collaboration between the instructor and the learner, enhancing "the student's ability to utilize a given theoretical construct to advance his or her learning processes" (Sawyer, 2004, p. 45). Class & Moser-Mercer (2006) applied this approach to interpreter training and proposed a teaching model based on Enkenberg's (2001) Teaching and learning strategies (see **Figure 6**). These strategies can be applied in activities designed to enhance specific skills, such as active listening and working memory, following the framework presented in Enkenberg's model.

Teaching and learning strategies	Description
Modelling	Demonstration of the temporal processing of thinking
Explanation	Explaining why activities take place as they do
Coaching	Monitoring of students' activities and assisting and supporting them when necessary
Scaffolding	Support students so they can cope with the task situation. The strategy also entails the gradual withdrawal of teacher from the process, once the students can manage on their own.
Reflection	Student assesses and analyses his/her performance
Articulation	The results of reflection are put into verbal form
Exploration	Students are encouraged to form hypotheses, to test them, and to find new ideas and viewpoints.

Figure 6: *Enkenberg's (2001) teaching and learning strategies, as cited in Class and Moser-Mercer (2006, p. 296)*

(*Note*. From "Designing learning activities for interpreter trainers: A socio-constructivist approach to training" By Class, B. & Moser-Mercer, B.In C. M. Crawford, R. Carlsen, K. McFerrin, J. Price, R. Weber, & D. A. Willis (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 295–300). 2006. p296).

The steps align closely with Setton & Dawrant's lesson stages mentioned earlier, but with a stronger emphasis on scaffolding- a key principle in constructivist theory. Essentially, the instructor initiates the learning process, provides support as needed, and gradually steps back to allow learners to take greater responsibility for their own learning. Learners are equipped with strategies and tools to reflect on their progress, self-evaluate, self-monitor their performance, complemented by instructor and peer feedback that guides them toward independently resolving challenges. This method is repeated for each learning objective or targeted skill and, when effectively implemented, fosters learner autonomy which not only benefits students during their academic training but in the professional world as well. Class and Moser-Mercer's (2006) study demonstrated that this structured, systematic approach—featuring progressive and scaffolded activities tailored to interpreting competence—effectively supports instructors in developing students' cognitive skills.

2.3 Reflective Practice as Part of Interpreter Training

A key didactic tool worth emphasizing in this context is Reflective Practice (RP). Reflective practice is a significant concept in education, particularly in fields that require professional competence. The approaches discussed above are supposed to enable trainees to acquire interpreting experience and build profession-related competence. Kolb (1984) highlights that experience serves as the primary source of learning and knowledge acquisition, contributing to the development of competence and expertise. However, experience alone is not sufficient. The learning process also requires an additional element-reflection-to effectively transform those experiences into meaningful knowledge (Cattaneo & Motta, 2021).This is where the role of reflective practice becomes essential. Schön (1983), the pioneer of RP, outlines it in various contexts as a process through which practitioners draw on components such as intuition, reflection, hypothesizing and experimentation to build knowledge and effectively navigate new, unfamiliar problems. Schön (1987) further explains that this approach bridges the gap between theory and practice found in traditional teaching methods which often fail to provide guidance on handling unexpected or unique situations that professionals frequently encounter. In higher education, the notions of RP are implemented through what is widely referred to as reflective learning, defined in the academic context as the learner's conscious and deliberate act of thinking about a particular situation-often focusing on errors or failures-, producing a detailed account of it, and then having it assessed by a tutor or instructor. This reflective process ultimately leads to behavioral changes aimed at improving future responses to similar situations (Moon, 2004).This concept is similar and closely tied to experiential learning. The key distinction lies in the fact that experiential learning is a broader framework within which reflective learning is typically embedded and specifically applied when the learner encounters challenging or complex situations (Moon, 2004). In other words, learning is always rooted in experience, whether the experience is simple

or complex. However, reflection only emerges when individuals are confronted with difficult or problematic situations that prompt deeper thought and analysis. Reflective learning, and by extension reflective practice, is best exemplified by the use of reflective learning journals. These journals act as a "vehicle for reflection" (Moon, 2006, p.1), enabling individuals to actively engage in the process of analyzing experiences and applying insights gained to enhance future actions (Moon, 2006). Reflective journals are widely used in both professional and academic settings, particularly in vocational fields such as teaching and healthcare. In recent decades, their application has also extended to reach the translation classroom (Lee & Gyogi, 2016). These journals function as a training tool that fosters introspection and critical thinking among learners, while simultaneously offering a practical means of accessing insights into learners' thought processes and reasoning. Within translation didactics, reflective journals have proven effective in helping students gain a deeper understanding of the translation process. By reviewing and analyzing their translation strategies and overall performance, students can identify areas for improvement and develop actionable strategies to address challenges and enhance their skills (Lee & Gyogi, 2016). Beyond this, the self-directed reflective learning approach facilitated by these journals supports trainees in their journey towards acquiring translation competence—a key objective of translation and interpreting programs designed to prepare students for the job market (Lee, 2014). Moreover, reflective journals hold significant pedagogical value, as they provide instructors with a window into their students' struggles, enabling them to adapt their teaching methods to better align with learning objectives and address students' needs more effectively. In light of this, it becomes evident how this metacognitive approach specifically designed to focus on the thinking process could offer significant benefits to process-oriented interpreter training. In effect, reflective practice, sometimes referred to in the literature as autonomous or self-directed learning, has gained growing attention in interpreting didactics as a

valuable tool for enhancing cognitive apprenticeship, with scholars advocating for its integration alongside skills training (Ficchi, 1999; Sawyer, 2004; Doğan, Arumi Ribas & Mora-Rubio, 2009). Doğan et al. (2009) highlighted that this approach is particularly effective in enhancing the cognitive skills of interpreter trainees and preparing them to face the different unexpected challenges of interpreting.

2.4 Practical Applications and Training Modules

Transitioning from theoretical educational approaches to their practical application in interpreter training involves bridging the gap between pedagogical principles and real-world implementation. While educational frameworks provide the foundation for understanding how interpreters acquire skills, the true test lies in translating these theories into actionable strategies within the training environment. Before discussing specific applications of skill training methods, it is essential to contextualize them by examining how and where they are incorporated into the interpreting curriculum.

2.4.1 Types of Interpreting Programs

Interpreting education and training programs vary significantly around the world. This is primarily attributed to the varying educational systems and the diverse stakeholders involved in the decision-making process, including "public institutions, policymakers, ministries, donors, the media, the private sector, and direct participants, i.e., instructors, students, and alumni" (Freihoff, 1995, as cited in Sawyer, 2004, p.1). Renfer (1992, p.175) identified four main categories of translation and interpreting programs:

- **The two-tier system:** Translation and interpreting courses are offered in consecutive stages. Candidates typically complete translation training and pass a final exam before taking an admission test for interpreter training. Alternatively, university graduates may bypass translation training and enter interpreter training directly after passing an admission test

- **Parallel training:** Translator and interpreter courses are conducted simultaneously, with students undergoing separate final examinations for each course.
- **The Y-model:** All students begin with a common foundational curriculum. After this initial phase, the program splits into specialized tracks for translation and interpreting.
- **Postgraduate Specialization:** Interpreter training is offered at the postgraduate level, often within specialized schools for translation and interpreting or through intensive programs offered by international organizations. This model is designed for advanced training, targeting individuals who have already completed a foundational degree.

Examples and descriptions of such programs can be found in Padilla & Martin (1992), Caminade & Pym (1998), Sawyer & Roy (2015) and Hurtado Albir (2019).

In most cases, interpreting instruction is not offered without a foundational course in translation. Padilla and Martin (1992) contend that training individuals with a background in translation to become interpreters is more efficient than training those without any knowledge of translation basics. This is largely because translation and interpreting share fundamental principles. For this reason, many programs, particularly those following the two-tier and Y-model structures, incorporate foundational translation and language enhancement modules. Even in postgraduate interpreting programs, general theoretical translation content is often included at the outset of the curriculum.

2.4.2 Curriculum Design

A number of studies have discussed interpreting curriculum design and the components that constitute an effective or ideal program. For instance, in

postgraduate training, Keiser (1978, p.21) argues that a comprehensive curriculum should include: (1) consecutive interpreting courses, (2) simultaneous interpreting courses, (3) public speaking courses supplemented with parliamentary procedure, conference terminology, and international organization studies, (4) documentation courses, and (5) a focus on interpreting as a profession.

Sawyer (2004) was the first to call for a holistic approach to curriculum development, emphasizing the need for a unified framework grounded in relevant educational theories, rather than fragmented efforts addressing isolated or singular issues in interpreter training. Indeed, a great number of studies and experiments could be found of teaching methods targeting specific areas such as comprehension exercises, note-taking techniques and reformulation strategies. However, a practical and effective approach must consider all components of the teaching process, encompassing course design, material selection, learner motivation, classroom dynamics, and ultimately, evaluation and assessment. In the following section, we will attempt to present some of the works which have been elaborated for this exact purpose, covering a range of topics from instruction methods inside the classroom to student assessment, particularly in the context of cognitive skills training.

2.4.2.1 In-class Procedures and Activities

For Setton & Dawrant (2016b), a standard training program needs to progress from basic skills training (especially active listening and analysis), to CI, sight translation, and then finally SI, all taught first into language A then to language B (p.xxx). Both the Complete Course and Teacher's Guide include detailed exercises and activities designed to develop various skills for both CI and SI. These activities are structured around four key stages (Setton & Dawrant, 2016b, p. 30):

- **Preparation:** This stage involves defining the learning objectives, selecting appropriate materials, planning time allocation, and communicating these details to students in advance. This allows students to prepare adequately for the session.
- **In class:** During this phase, the lesson plan is put into action. The exercise is introduced and explained, followed by activities such as brainstorming and contextualization to activate prior knowledge and relevant terminology.
- **Performance, critique and teaching:** Students perform the exercises, after which feedback is provided to facilitate discussion, corrections, and improved attempts. Theoretical explanations and instructor demonstrations may also be incorporated as needed to reinforce understanding.
- **Wrap-up:** The session concludes with a summary of key takeaways from the lesson. Recommendations for further practice, such as homework or group/individual exercises, may also be provided to reinforce learning.

For example, Setton & Dawrant (2016a) suggest an exercise called “Listening Cloze” to work on speech comprehension, particularly for speeches that are poorly presented or filled with pauses, making it difficult to focus on the flow of ideas (p. 92). To prepare, the instructor outlines the lesson objectives, which, in this case, are to teach students to recognize larger units of meaning while listening, even in the presence of speech redundancy, and to develop the ability to anticipate the speaker's ideas and thought processes as a strategic skill. The instructor then selects the materials, consisting of a written text in the students' B or C language, from which he omits certain words and phrases which are possible to predict based on context and background knowledge. In the classroom, the instructor informs students of the speech topic and exercise procedure in order to invoke background knowledge. He then proceeds to read aloud the text, marking the omitted passages with silence or filled pauses. The

text is read a second time, this time pausing to allow students to fill in the gaps with their suggested answers. Students are given the opportunity to perform the exercise, with one rendering the speech fully with the missing passages into their A language, and the others offering their thoughts and suggestions for better answers. The instructor can assist by clarifying why certain words were easily identified while others posed greater difficulty, as well as illustrating how context can be effectively utilized to determine the correct words. To conclude, the strategies used during the exercise can be reviewed, a final rendition can be presented, and variations of the exercise and materials can be suggested for additional practice.

This method offers instructors a clear, step-by-step framework that ensures a systematic and comprehensive approach to teaching interpreting skills. By involving students in the preparation phase and encouraging active participation through brainstorming, contextualization and group discussions, it fosters greater engagement and a sense of ownership over the learning process. This helps students develop autonomy and critical thinking skills, which are essential for their growth as interpreters. Moreover, the targeted exercises and activities are specifically designed to enhance key interpreting skills, such as active listening, deverbalization, delivery skills and note-taking (Setton & Dawrant, 2016a), aligning with the competencies outlined in interpreting competence and aptitude models. Finally, the inclusion of performance critique and feedback enables students to identify areas for improvement and refine their techniques. By combining constructive feedback with theoretical explanations and demonstrations, the methodology combines theory and practice- a cornerstone of process-oriented interpreter training. Special consideration is also paid to specific requirements for class organization. For instance, it is recommended that the class size does not surpass 8 to 10 students, with an ideal range of 3 to 6 students (Setton & Dawrant, 2016b, p.23). This approach ensures that each

student has sufficient opportunities for practice and receives individualized, attentive feedback.

2.4.2.2 Assessment and Feedback

Assessment is an integral part of curriculum design and implementation, serving as a tool to evaluate the extent to which the curriculum objectives are met (Sawyer, 2004). Evaluating interpreting trainees, particularly their performance in terms of cognitive skills, presents significant challenges, if not outright difficulties. Unlike traditional assessments that focus on the quality of the final product, as commonly discussed in interpreting quality literature, this type of assessment centers on trainees' performance—specifically, the interpreting process itself. This shift in focus raises important questions about the most appropriate methods for assessing such performance.

Various assessment methods are used in the field of education. In translator and interpreter training, Hatim & Mason (1997) make the distinction between two types of assessment: *formative* and *summative* assessment. Formative assessment includes providing constant and continuous feedback throughout the learning process. On the other hand, summative assessment is conducted at the conclusion of a course or program to evaluate whether the learner has met the established requirements. For process-oriented training that focuses on the incremental development of specific skills, formative assessment is crucial and indispensible, and Hatim & Mason (1997) stress the importance that exercises designed for such activities must not be designed as reduced versions of the final summative examination. In other words, in order for formative assessment to be effective and achieve the goal of equipping trainees with the necessary cognitive skills, the instructor must include exercises that enable him to perceive the learners' process of acquiring the skills and provide support through it, not exercises to which the sole purpose is to be able to perform interpreting to the extent that enables them to pass the final examination.

Sawyer (2004) highlighted a third type of assessment, as described by Gipps (1994), known as *ipsative* assessment, in which the student self-evaluates by comparing her current performance to their previous performance. This type of assessment ties directly into reflective practice, as it encourages learners to reflect on their learning, monitor their progress with support from peers and mentors, and engage in ongoing self-evaluation—a process that should ideally continue into their professional careers. Sawyer's (2004) framework, depicted in **Figure 7**highlights the key differences between formative, summative, and ipsative assessment methods. When combined, he argues that the results of these assessment methods could prove to be a valuable tool for evaluating the effectiveness and success of the curriculum and teaching methods.

Formative	Instructor evaluation during course of teaching Feeds back into teaching and learning process Grading on assignments Feedback on coursework Feedback on ipsative assessment (self-assessment statements, journal, field notes, or log)
Summative	Jury / instructor evaluation at end of program or course Determines how well student has learned and whether teaching is effective Degree and course examinations, thesis or portfolio projects
Ipsative	Self-evaluation by a reflective practitioner Evaluation of current performance against previous performance and performance of other participants On-going reflection on learning Integrates instructor and peer feedback Formalized in self-assessment statements, journal, field notes, or log Ideally continues throughout the professional career

Figure 7: *Types of assessment, distinguishing features, and examples (taken from Sawyer, 2004, p.107)*

(*Note*.From *"Fundamental aspects of interpreter education: Curriculum and assessment" By Sawyer, D. B. 2004.* John Benjamins Publishing Company. https://doi.org/10.1075/btl.47.p,107.

Another noteworthy study on interpreting assessment, and one of the few to focus on evaluating performance based on internal factors, is by Walczyński (2017). His research examines the assessment of interpreting trainees' performance in CI, with a particular emphasis on cognitive and psychological elements, which he refers to as "affective factors." (Walczyński, 2017, p.122). The study introduces an assessment tools which evaluates interpreting trainees not only on accuracy and fluency, but also on factors that affect performance such as anxiety, confidence and motivation. The results of the study revealed that high anxiety negatively impacts interpreting performance, leading to more errors and hesitation, while confidence and emotional control contribute to better results. Compared to existing models, the tool proposed by Walczyński uniquely encapsulates emotional and psychological influences, providing a valuable tool for improving interpreter training programs. In the context of our study, the performance assessment form proposed by the author (see Appendix A) can be used and built upon to conduct a similar analysis of students' performances with a focus on cognitive skills. A comparable assessment rubric has been developed by Shafiei (2024) for evaluating CI performance across three key areas: content, form, and delivery. Content and delivery each contribute 40% to the total score, while form accounts for 20%. The rubric utilizes a five-level performance scale (Excellent, Good, Fair, Poor, Zero), complete with detailed descriptors for each criterion (Shafiei, 2024, pp. 13-14). Some descriptors, particularly in content and delivery, are closely linked to cognitive skills, such as those for accuracy and completeness (memory), self-correction and controlled speech rate (self-regulation), and intonation and speech clarity (delivery).

Such studies incorporating analytical assessment tools highlight the importance of elaborating a structured and objective assessment in interpreter training. Further research is essential to validate these tools, refine the rubrics, and test their applicability across diverse contexts and interpreting modes.

Finally, there has been increasing advocacy for incorporating self-assessment as a fundamental component of interpreter education. A study by Postigo Pinazo (2008) demonstrated that integrating self-evaluation tools and reflective exercises enhances students' awareness of their strengths and weaknesses, improves note-taking, language proficiency, and delivery skills, and ultimately leads to better performance, heightened motivation, and the adoption of more effective learning strategies.

2.4.3 Training Modules

The significance of basic interpreting skills training is evident in the way the extensive literature on the subject has been translated into practical training modules, which are now integrated into the curricula of numerous interpreter training programs. Below are some illustrative examples.

- **Conference Interpreting MA at the Faculty of Translation and Interpreting - University of Geneva**

The Master of Arts in Conference Interpreting at the Faculty of Translation and Interpreting is a three-semester program offering a diverse range of courses and modules. The program supports language combinations involving 2 to 4 languages, including English, Spanish, French, Italian, Arabic, Russian, and German. Admission requirements include meeting the university's registration criteria, holding a university degree, and passing written and oral entrance exams to assess linguistic proficiency and knowledge of current affairs (University of Geneva, n.d.).The first semester involves an introduction to the main professional skills and knowledge, and includes introductory seminars and theoretical modules. Our interest lies within the introductory seminars, which are designed to provide students with a foundational understanding of conference interpreting, (the original course description in French can be found in Appendix B). The stated aims of the course are: (1) understanding the key tasks involved in consecutive and simultaneous interpreting, (2) exploring the

underlying cognitive skills, (2) emphasizing the importance of feedback in skill acquisition and (3) developing a structured feedback matrix and enhancing the ability to analyze and produce well-structured written and spoken discourses (Université de Genève, 2023).The course focuses on developing a variety of essential skills, including sub-skills for consecutive and simultaneous interpreting, rapid analysis of diverse texts and speeches, and understanding the role of feedback. It also emphasizes learning how to effectively give and receive feedback to enhance and accelerate the process of skill acquisition. As for assessment, the program employs a variety of methods to evaluate students' knowledge, skills, and progress throughout their training. Regarding formative methods, continuous assessment is applied through frequent evaluations throughout the semester, and these include oral interpreting performances, written assignments, class participation and engagement in discussion and exercises, and peer and self-evaluations.

- **The Translation and Interpreting MA at the University of Westminster**

This postgraduate program is offered over 1 year full-time or 2 years part-time. It provides training in several language combinations, including English paired with Chinese, French, German, Italian, or Spanish. In addition to core modules focused on interpreting, specialized translation, and professional development, the program features a dedicated module called the "Interpreting Skills Lab" (University of Westminster, n.d.). This module is designed to teach and develop the essential skills needed for successful interpreting, aiming to "complement [students'] acquisition of practical, language-specific interpreting skills through conceptual knowledge development, discussion, and practical implementation in simulated professional scenarios." The program employs a range of activities, such as seminars, workshops, mock conferences, and lab practice, supported by reflective practice through the use of reflective journals and peer collaboration.

- **Master of Conference Interpreting at the Macquarie University - Australia**

This postgraduate program spans two years and is structured into three main zones: Foundation, Core, and Flexible. Among the core zone is the unit or module titled *Introduction to Interpreting Practice*. This unit focuses on introducing the fundamental concepts of interpreting, covering key cognitive skills such as "listening skills, text analysis, memory retention, note-taking and oral translation skills" (Macquarie University Handbook, n.d.). By the end of the program, students are expected to:

- Accurately transfer messages from their B language to their A language.
- Apply core interpreting techniques and strategies, including segmentation, reformulation, and prediction.
- Develop self-directed learning skills.
- Demonstrate reflective and critical practice to foster lifelong learning.

As for assessment, a combination of all three methods are employed through the use of portfolios, practice-based tasks (consecutive interpreting), and a live dialogue interpreting examination (Macquarie University Handbook, n.d.).

The few examples presented here demonstrate how interpreter training programs initiate training by targeting the development of the main cognitive skills discussed within the literature on process-oriented training. This means that parties involved in the curriculum design process understand and take into account the research on the role that such preparatory courses play in helping trainees develop core cognitive abilities that are essential to both consecutive and simultaneous interpreting, as well as reflective practices that are crucial for progress in the field.

2.5 Challenges, Gaps, and Future Directions

Curriculum design and implementation face significant challenges and limitations. Translation didactics, particularly interpreting didactics, remain relatively new and underdeveloped compared to more established educational fields. Further research is essential to address the complexities of interpreter training, especially process-oriented approaches that emphasize cognitive skill development. This research is crucial for establishing robust aptitude models, comprehensive curriculum materials, effective instructional methods, and reliable evaluation and assessment tools. Hurtado Albir (2019) highlights the need for increased quantitative and qualitative data collection to validate proposed didactic methods and calls for the replication of experiments to achieve more valid and broadly applicable results.

Despite these challenges, the progress made so far is both encouraging and impactful. Numerous unexplored areas present opportunities for future advancements, offering potential for further innovation and improvement in the field. For instance, a new assessment method in education has emerged known as Cognitive Diagnostic Assessment (CDA), designed to measure the degree of mastery of domain-specific cognitive sub-skills and provide insight into learners cognitive strengths and weaknesses (Javidanmehr & Sarab, 2017).This tool has the potential to be highly effective in assessing cognitive aptitude for interpreting. A recent example of innovative assessment methods is highlighted in a study by Chang (2024), which employs Structural Equation Modeling (SEM)—a framework for analyzing complex relationships between phenomena—to evaluate the validity and reliability of an assessment scale. This scale focuses on four key concepts in interpreter training: metacognitive self-regulation, organization, peer learning, and motivation. The study aims to provide objective, evidence-based research to supplement existing data, with the goal of identifying new approaches to enhance interpreting curricula as part of

the new emerging sub-area known as "metacognitive interpreter studies" (Chang, 2024, p. 101).

It is also noteworthy to examine how rapid and ongoing technological advancements, along with the integration of distance learning, have influenced interpreter training. For instance, these developments have profoundly influenced methods for real-world training and reflective practice, as illustrated in a study by Dingfelder Stone (2015). The author highlighted innovative approaches implemented at the University of Mainz/Germersheim, such as the *Friday Conference*, a simulated professional setting where students practice interpreting live speeches and discussions. Additionally, the *MOPSI* platform (Moodle Online Platform for Self-study in Interpreting) was introduced as an online tool offering structured exercises and training activities. This platform enables students to address specific weaknesses and develop their skills independently, while providing instructors with a means to guide and evaluate their progress. This combination of authentic practice and self-directed learning allows students to be exposed to realistic interpreting challenges and offers them an opportunity to develop skills and strategies to overcome them.

2.6 Conclusion

From the discussion above, we can clearly see that cognitive training has become a central focus in interpreter education. Programs are increasingly integrating exercises and modules tailored to develop and strengthen cognitive sub-competences, such as active listening, memory retention, decision-making, and delivery. The practical implementation of such training in curricula and its impact on interpreter competence development are well-documented in the studies previously mentioned. In the practical section of our research, we aim to apply these findings to analyze training methodologies within an Algerian interpreting program. Our goal is to explore the effects of cognitive training on

trainees' performance, with the aim of enhancing the curriculum by incorporating the most recent and effective cognitive training techniques.

Chapter Three:

Investigating the Presence of Cognitive Training in Algerian Interpreting Programs – An exploratory study

3 Introduction

The theoretical framework drawn across the two chapters of this research established that cognitive interpreter training is not just beneficial, but indispensable in any interpreting program that emphasizes the interpreting process and the development of profession-specific cognitive skills. The present study seeks to explore whether or not a cognitive approach is employed in the training of Algerian interpreting students, particularly through the integration of targeted exercises designed to enhance cognitive skills, especially during the foundational stages of training where it is most critical.

3.1 Contextualizing Interpreting Training in Algeria

Interpreter training in Algeria is relatively recent compared to programs worldwide, with its curricula undergoing significant changes over the decades. The implementation of the first interpreter training programs dates back to 1963, when the Higher School of Translation and Interpreting was established through a UNESCO initiative to support the Arabization efforts of the newly independent nation. This institution served as the first nucleus of what would later become the Translation Institute of Algiers. Initially integrated into the Institute of Foreign Languages at the university, a dedicated translation department was created in 1975, which eventually evolved into the Translation and Interpreting Institute (Bacha, 2018).In an effort to advance translation and interpreting education, translation departments were established within foreign language faculties across Algeria, including the expansion of the department at the University of Oran into the country's second institute, the Translation Institute of Oran. A third key institution is the High Arab Institute of Translation (ISAT), an entity affiliated with the League of Arab States, which provides postgraduate courses in translation, interpreting, and translation technology (ISAT, n.d.). Beyond these specialized institutions, interpreter training is often

offered as part of broader translation or foreign language programs, being typically limited to superficial instruction with a focus on theoretical foundations. In the academic year 2008–2009, undergraduate translation and interpreting programs were suspended due to concerns over the poor quality of graduates and the inadequacy of the curricula (Bacha, 2018). Several attempts were made to restructure these programs, particularly at the institute level, with the first major effort occurring in the early 2010s. However, this initiative was also discontinued after a few years, only to be reintroduced in 2019 as a completely redesigned program known as the *Master à Cursus Intégré de Licence* (MCIL), an intensive and comprehensive five-year program aimed at addressing previous shortcomings and enhancing the quality of interpreter training.

Teaching approaches within the various programs and institutions differed based on factors such as language combinations, program duration, and areas of specialization. The previous 4 year-program at the institute of Algiers held a range of modules that focused on the development of students' linguistic skills, such as grammar, syntax, oral and written expression, translation and interpreting techniques, in addition to secondary modules covering a range of topics such as politics, economy, law and sociolinguistics. For interpreting, consecutive and simultaneous interpreting are introduced in the final year (Chaal, 2017). Although this provides some insight into the typical training methods for translators and interpreters, there is a lack of sufficient research offering a comprehensive overview of actual teaching practices and approaches, particularly in relation to the new curricula. The present study aims to provide some clarity on this issue. In the context of this study, the focus will be on the formal program offered at the Translation Institute of Oran, an institution from which the author is a former graduate

Before delving into the specifics of the practical aspect of the study, we believe it necessary to explain the rationale for undertaking this research and the reasoning behind the manner in which it is being conducted. As a former student at the Translation Institute of Oran, where we pursued a Master's degree in Translation and Interpreting during the academic years 2018–2020, our personal training experience proved inefficient in terms of practical and adequate instruction methods oriented towards the development of interpreting skills and competences, failing to prepare graduates for the requirements of the profession in the actual job market. Although the reasons for this are complex and plenty, careful analysis and retrospection lead the author to believe a contributing factor as to why trainees graduated with little to no practical experience in interpreting -and with the majority of them failing interpreting modules-, was the lack of proper cognitive preparation for the interpreting tasks given in class, which consequently became the subject of our MA dissertation. It should also be noted that at this time, interpreting classes involved training exclusively in Sight Translation and Consecutive Interpreting techniques, with no actual introduction to Simultaneous Interpreting due to the large number of students and the lack of access to properly equipped laboratories. This leads to another critical point: during this period, the translation and interpreting program at the institute was undergoing a transition from a 2-year Master's program to an intensive 5-year Integrated Master's program, all while preparing for a relocation of the institution. Understandably, all these factors help explain why training at that period was lacking in terms of adequate means and didactic strategies that go along with the desirable teaching-learning outcomes of such a program. Yet, the implications of the new program appeared to be promising and seemed to head towards tackling these shortcomings, which prompted the author of the present work to continue their investigation into interpreting training programs in Algeria, taking the Translation Institute of Oran as a model.

3.2 Research Design and Methodology

3.2.1 Research Approach

In interpreting research, Gile (1998) points out that researchers interested in empirical studies take one of two main routes: either observational or experimental research, often with an inclination towards the latter. He argues that this tendency to favor experimental research projects could be "depriving the discipline of much useful data", and discouraging beginners from conducting simpler observational studies (p.70). For this reason, we decided to combine both observational and experimental research in this study. Accordingly, the study was conducted over two phases: an observational phase and an experimental phase. This chapter discusses the first part of our investigation, where we sought to explore whether or not cognitive training was incorporated in the interpreting classroom. For this purpose, a preliminary exploratory study was conducted with third and fourth year translation and interpreting students at the Translation Institute of Oran, before carrying out the experimental study.

3.2.2 Data Collection Methods

Data collection was conducted through a multi-methods research design consisting of: (1) a survey research design, (2) classroom observation followed by unstructured short discussions.

3.2.2.1 The Survey

The first phase of the current research design is an exploratory study involving a questionnaire directed at third and fourth year students of translation and interpreting at the Translation Institute of Oran.

Objectives

Before studying the impact that such an approach can have on trainees' interpreting performance, we first attempted to explore whether or not trainers resort to strategies and exercises that target students' mental skills required for interpreting. We also wanted to know whether or not students themselves were

familiar with these required skills and attempted to work on improving them as well their overall skills.

Research Instruments

- **Students' Questionnaire**

The initial data was gathered through a questionnaire, which yielded 52 responses. The goal was to assess participants' awareness of the cognitive skills essential for interpreting and to determine whether they had been exposed to exercises designed to develop those skills. The questionnaire is exploratory in nature and does not seek to acquire specific knowledge. As Gile (1998) indicates, an exploratory study analyzes a situation without the intent to make a 'specific point'. However, it is not random; rather, it is guided by the investigator's initial expectations, which can later evolve into well-defined hypotheses (p. 72). To this end, the questionnaire comprised 10 questions written in both English and Arabic, as well as a brief introduction and an additional space at the end for any further comments by the respondent (see Appendix C).

The questions were a mix of close-ended and multiples choice questions, apart from the first question defining the respondent's language pair. The questions were direct, simple and easy to understand. The questionnaire was administered on-site in the classroom before the start of classes as a way to make sure the responses were collected, and the respondents were encouraged to answer in whichever language they felt most comfortable with. Naturally, no questions were formulated directly or administered without revision. The questionnaire was evaluated by two expert instructors, who reviewed and discussed the questions to eliminate ambiguities, refine their wording, and add or remove items based on their relevance to the study's subject.

- **Sample**

A number of 52Translation and Interpreting students at the Translation Institute of Oran took part in this survey. At the time this study was conducted, the participants were in their third year (fifth semester) during the academic year 2022-2023. We chose to conduct this preliminary study with third-year students because, as previously mentioned, the 5-year translation and interpreting training program at the institute—along with similar programs at the Algiers Institute and other universities nationwide—introduces students to interpreting for the first time in their third year as part of an introductory course. At the time of conducting this research, students had been studying for at least two months with a minimum of 6 hours per week dedicated to Simultaneous Interpreting (3 hours for each language combination) as well as 1h30 for Consecutive Interpreting. Although it is no longer offered as a standalone module, as it was in previous programs, sight translation is still typically introduced to students to help bridge the gap between written translation and oral interpreting. These modules are designed to prepare students for more advanced and specialized training in the subsequent two years, aiming to familiarize them with the principles of the two main modes of interpreting and the cognitive and practical challenges they are likely to face.

- **Structure**

The questionnaire consists of 10 main questions. Question 1 categorizes participants into their respective language groups (either English or Spanish as their B language). The remaining questions, organized in sets of 2-3, aim to explore students' perspectives on the nature of their training, their awareness of the cognitive aspects of interpreting, their practice habits, and their attitudes toward the inclusion of cognitive training in their courses. An additional space was provided at the end of the questionnaire with the aim of acquiring any further feedback and qualitative data from respondents.

3.2.3 Descriptive Analysis

The following section involves a description of the data collected through the questionnaire. The first question allows us to categorize the respondents in their language combination group and observe whether or not their training differs overall. Both groups study the same modules with the sole difference being the main language, meaning they will naturally be taught by different instructors and teaching methods differ from one instructor to the other. We therefore sought to determine whether the responses would show significant difference.

As has been discussed before, one issue regarding descriptive data and particularly quantitative ones in interpreting studies is the small size of samples. Interpreting groups and samples are generally smaller than other categories both in the field of translation and in general, which makes it difficult to generalize findings. These kinds of studies are nonetheless important and necessary in the collection of as much data as possible. In this case, the sample represents the first cohort of students in the new program, excluding absentees, which explains the limited number of participants. However, as future classes progress both at the institute and nationwide, replicating similar studies with larger samples will become increasingly feasible.

Of the 52 participants, 25 belong to the English language group and 27 to the Spanish language group.

Language Pair	**N**	**Percent**
Arabic-French-English	25	48.1%
Arabic-French-Spanish	27	51.9%
Total	52	100%

In the next part, we wanted to gauge students' perception of the modules and nature of training as it is their first encounter with interpreting, so the next question (Q2) sought to explore which mode of interpreting students struggled with the most.

Q2		**Responses**	
		N	**Percent**
Modules	Consecutive interpreting	8	15.1%
	Simultaneous interpreting	45	84.9%
Total		53	100%

As anticipated, the majority of students find simultaneous interpreting more challenging. However, a smaller portion (15%) report difficulties with consecutive interpreting, which is understandable given that some individuals struggle with the dual task of interpreting and taking notes on large amounts of information delivered over extended periods, unlike the immediate interpretation required in simultaneous mode.

In interpreter training, the consensus is that the largest portion of training must be dedicated to practice using realistic and authentic exercises and tasks.

Q3		**Responses**	
		N	**Percent**
Nature of training	Theoretical	8	15.7%
	Practical	34	66.7%
	Both	9	17.6%
Total		51	100%

66.7% of respondents agreed that their training is more practical than theoretical, while 17.6% answered with a mix of both, and only 15.7% said it was more theoretical in nature. In order to get more qualitative information on the nature of training, a space was given for additional comments and the responses provided more valuable insights into the matter in question. 15 participants provided extra comments in which they agreed that while the overall emphasis is on practicing with the aim of improving students' general translational abilities, instruction methods differ from one instructor the other. As one response states:

"هو نظري وعملي في نفس الوقت وهذا يختلف من أستاذ إلى آخر. فمثلا أساتذة الاسبانية يحرصون دوما على الإكثار من التمارين التطبيقية سواء كانت شفهية أم كتابية. أما بالنسبة للغة الفرنسية فغالبا ما تكون نظرية فقط".

English Translation:

"It is theoretical and practical at the same time and this differs from one teacher to another. For example, Spanish teachers are always keen on providing many practical exercises, whether oral or written, while for French it is often theoretical only".

Responses also provided a glimpse into the type of exercises given in class:

"في الغالب يكون التدريب في الترجمة عملي، حيث نستمع لمقاطع من الفيديوهات أو النصوص ونترجمها مباشرة شفويا".

English Translation:

"Training in translation is mostly practical, where we listen to clips from videos or texts and translate them orally immediately".

Another participant also mentioned that they would occasionally do memorization exercises.

The next set of questions (Q4-Q5) were meant to tackle the main topic of the survey, which is the incorporation of training targeted at enhancing learners' cognitive skills such as active listening, memory, concentration, visualization and delivery.

Q4: Are you familiar with the cognitive skills needed for interpreting?	**Yes**	**No**	**Total**
Frequency	49	3	52
Percent	94.2%	5.8%	100%

When asked if they were familiar with the cognitive and mental skills needed for interpreting, 94.2% of respondents answered yes. This was further supported by a section of the questionnaire where participants could provide additional comments. Many described their experiences with interpreting and highlighted the key aspects they believed were crucial to master and refine their skills. One participant wrote:

"الترجمة الشفوية تحتاج المداومة لتنشيط الذاكرة من أجل تخزين الكثير من المعلومات والتحلي بالتركيز عند محاولتك ترجمة نص وفهم الفكرة بطريقة صحيحة... ويجب على المترجم أو الطالب تطوير مهاراته دائما وذلك بالاستماع إلى مقاطع لتدريب نفسه على فن الاستماع والفهم والقدرة على إيصال الفكرة بطريقة مفهومة وصحيحة" .

English Translation:

"Interpreting requires constant [training] to activate memory in order to store a lot of information and concentrate when trying to translate a text and understand the idea correctly… and the translator or student must always develop his skills by listening to clips to train himself in the art of listening and comprehension and the ability to communicate the idea in an understandable and appropriate way".

Recognizing these elements can either be the result of self-reflection and awareness of one's abilities and weaknesses, or through guidance and explanation provided by the instructor. Analyzing the extent to which students recognize this aspect of their learning and take it into consideration when training requires a more thorough and in-depth investigation which will be attempted in the second part of this study.

We further explored the topic by asking participants whether they had received any specific training aimed at enhancing their cognitive skills and, if so, for how long.

Q5: Have you, at any point during your training, done any exercises that can help improve your mental abilities and skills such as the ones mentioned above?	**Yes**	**No**	**Total**
Frequency	40	12	52
Percent	76.9 %	23.1%	100%

The majority of respondents (76.9%) answered that they had indeed received training targeting the enhancement of their skills, while 23.1% answered in the negative. One possible explanation could be the differences in instruction methods and the areas that each instructor chooses to focus on when teaching. Those who answered "yes" provided a range of responses, estimating the duration of this training both in general and within the classroom. The training typically occurred a minimum of three times per week, with each session lasting approximately 20 to 45 minutes, and spanned no more than two months—meaning it had been ongoing since the start of the academic year when the questionnaire was administered. Responses also indicated that this type of training only began in their current third year, consistent with our earlier mention that interpreting is introduced in the third year of the program.

While in-class training is essential for evaluating and guiding students' learning progress, the most significant effort to refine one's skills must occur regularly and extensively outside the classroom, tailored to each learner's abilities, level, and preferred learning methods. This is why it is crucial for instructors to emphasize the importance of consistent practice and to equip students with effective study and practice strategies that they can apply independently or collaboratively with their peers. To explore this further, the next section of the questionnaire focused on participants' practice habits for enhancing their cognitive skills.

Q6: Do you work on improving your mental skills for interpreting	**Yes**	**No**	**Total**
Frequency	44	8	52
Percent	84.6 %	15.4%	100%

84.6% of answers affirmed that participants dedicate time to improving their interpreting skills. The following question aimed to determine whether participants repeated the same exercises provided by instructors in class or sought out new materials and strategies, as not all learners encounter the same challenges. Effective practice should also be tailored to each learner's level, and once a skill or task is mastered, the difficulty of activities should be increased to ensure continuous progress.

Q7		**Responses**	
		N	**Percent**
Study habits	Repeating the same exercises given in class	16	30.8%
	Searching for new exercises and strategies	36	69.2%
Total		52	100%

The responses reveal that most students (69.2%) seek out different strategies and exercises when practicing, while 30.8% of them repeat the usual exercises given in class. Participants were asked to justify their answers and some responses explain the reasoning behind their choices clearly:

One participant who chose the first option wrote: *"Repeating the exercises from class helps you understand the lessons better. Doing these exercises over and over again lets you improve and make your interpreting skills better in a[n] organized way as you become more familiar with specific contexts and terminology […] Furthermore, the act of returning to these exercises allows you to rectify any errors you may have made initially, resulting in a gradual and continuous enhancement of your abilities".*

Another participant who picked the second response explained that while the exercises given in class are helpful, they personally prefer to look up more exercises online, stating: *"When we look up in internet we get to know tons of new exercises that we have never been introduced to in our interpreting classes so in my standpoint I don't limit myself to what has been given to me in classes since we're not exposed to all options".*

Responses also highlighted the earlier-mentioned differences in students' learning styles and motivations when it comes to practice: *"Every student has his own method to develop his own skills in terms of listening skills / producing speeches / learning new vocabulary. I'd prefer going on my own pace and find or create other strategies that work for me".*

This reflects the need to promote metacognition and reflective practice in order to gradually assist learners in taking responsibility for their own learning. Intensive and regular practice both individually and in groups for a long time in order to recognize one's strengths and weaknesses and work on improving them fall in line with the notions of reflective practice discussed previously, and the largest portion of such training is done outside of the classroom. We therefore sought to determine how much time learners dedicate to practice, particularly given that the classroom environment limits the ability to focus on individual learners due to the lack of equipment and the large group sizes.

Q8		**Responses**	
		N	**Percent**
Hours dedicated for practice outside of the classroom	None	1	1.9%
	Less than 1h	26	50%
	1-2h	20	38.5%
	3-5h	4	7.7%
	More than 5h	1	1.9%
Total		52	100%

Setton and Dawrant (2016b) recommend that students dedicate approximately 8–10 hours per week to interpreting exercises, ideally in pairs or small groups (p. 222). However, half of the participants (50%) reported practicing for less than an hour per week, while 38.5% indicated they practice 1 to 2 hours weekly. This means that the majority of students (88.5%) fall short of the recommended practice time for an activity as challenging and demanding as interpreting, which is likely to negatively impact their overall performance and outcomes. While learner motivation plays a significant role in encouraging skill development, trainers and the program structure must also ensure that students meet the necessary requirements and competencies by the end of the course. This can be achieved through consistent and appropriate assessment and monitoring of their progress.

We also inquired about participants' study preferences—whether they preferred practicing alone or in groups—as group exercises are widely recognized for fostering both personal and collective growth and are a key component of experiential learning. This approach is exemplified in the interpreting program at ESIT, which mandates up to 15 hours of group training per week (ESIT, n.d.).

Q9		**Responses**	
		N	**Percent**
Practice habits	Alone	34	65.4%
	In groups	13	25%
	Both	5	9.6%
Total		51	100%

More than half participants prefer to study alone, possibly due to study preferences and differences in learning styles and levels. Only 25% of respondents said they prefer to study in groups and only 5 participants answered with both.

Finally, participants were asked whether or not they would like to have exercises targeting cognitive skills included in their courses, and almost all (94.2%) answered in the affirmative.

Q10: Would you like to have practical exercises for improving cognitive skills added to your interpreting program?	**Yes**	**No**	**Total**
Frequency	49	3	52
Percent	94.2%	5.8%	100%

This concludes the descriptive quantitative data of the main questions of the questionnaire, and following is a discussion of the results and their implications.

3.3 Results and Discussion

The goal of the questionnaire was to investigate whether interpreter training in Algerian programs includes exercises designed to enhance students' cognitive skills, rather than diving directly into interpreting practice without any preliminary preparation. On the one hand, the data collected revealed that compared to previous programs, the current translation and interpreting course is more practical than theoretical, especially starting from the third year of the program where students are introduced to the basic theoretical aspects of the field. The responses also indicated that cognitive training is indeed provided to some extent at the beginning of interpreting training, represented in certain exercises for training listening comprehension and memory. On the other hand, participants' responses showed that although students would like to have more training of this sort integrated in their program, the majority of them dedicate little to no time and effort to enhancing their cognitive skills outside of the classroom, where it is most needed and recommended. This could be attributed to a number of reasons:

- Motivation for learning is the biggest drive for students to work on improving their skills and abilities, but because the majority of students enroll in the translation and interpreting course with the goal of becoming an official translator, they consider interpreting secondary and often disregard it for being too difficult and not as demanded in the local job market.
- Beginner students are often not efficiently self-reflective or aware of the underlying complex mental processes involved in such activities, and so it is the instructor's role to guide their learning process in a way which helps them become better aware of their thinking and actions so that they can locate areas of difficulty and struggle. This is often impossible to achieve at institutions and programs with large numbers of students, and where instructors themselves may lack proper didactic and pedagogical training in fields that require special expertise such as interpreting.

At the end of the questionnaire, a space was provided for participants to add any relevant information or comments regarding their interpreting training at the institute. The collected responses provided valuable and important qualitative data reflecting students' perception of their training and areas which could be improved. Three main themes were identified through the answers: (a) the need for more specialized modules, (b) the need for more practical training in the appropriate settings for interpreting and (c) the need for regular assessment and evaluation.

a. The need for more specialized modules:

A recurrent request on students' part was to reconsider certain modules which they deemed unnecessary, compared to more essential topics which they would like to be introduced to. Here are some of the comments regarding this matter:

"حبذا لو يستبدلوا بعض المقاييس بمقاييس أكثر أهمية وذات صلة بالترجمة وخاصة الترجمة الشفوية للتدرب أكثر في هذا المجال" .

English Translation:

"It would be better if they replaced some of the modules with ones that are more important and relevant to translation and especially interpreting in order to train more in this field".

"أتمنى أن تتم إضافة مقاييس للترجمة مع حذف المقاييس التي لا تفيدنا كمترجمين" .

English Translation:

"I hope that more translation modules are added all while deleting those that do not benefit us as translators".

There seems to be an agreement and insistence on this point in multiple responses. Learners seem to find certain modules "boring" and irrelevant compared to more practical and specialized ones that they would like to explore. The modules in question could be secondary ones relating to more general topics such as IT related modules, research methodology and university work modules as well as introductory modules of different disciplines (law, economy, politics, etc…). As a former student, this sentiment is both familiar and understandable, particularly for beginners who may find it draining and unnecessary to dedicate multiple hours each week to secondary topics that are largely theoretical in nature. For example, a lot of students do not see the value in being reintroduced to the basics of information technology since the majority of youth nowadays are familiar with it compared to earlier generations. However, years of research and specialization in the field prove to learners the significance and relevance of such topics. The interdisciplinarity of translation and interpreting requires that anyone belonging to the field be relatively knowledgeable in different topics and disciplines, and university students in particular need to acquire knowledge not only in the main field, but all aspects of university as well as real-life work.

It should be emphasized that a lot of work has been put into the elaboration of the current program and unremitting efforts were made to make it as comprehensive and efficient as possible for the betterment of the training quality provided to learners. A possible solution which could be considered to make learning more interesting in this regard is to render these modules more translation-oriented and to study them in the context of translation and interpreting instead of general exploration of the topics. In interpreting training for example, including practical specialized modules -such as community interpreting, legal and medical interpreting- with an emphasis on interactive and situational training could engage learners more and help them acquire knowledge in both intersecting domains simultaneously.

b. The need for more practical training in the appropriate settings for interpreting

The most requested and agreed upon point in the comments was concerning the need to alter the mode of training students in interpreting modules. As mentioned before, at the time this part of the study was conducted, the equipped laboratory with interpreting cabins had not been used yet, and practice was entirely done in class and differing from one instructor to the other. Various participants stated their desire to be trained in the cabins to get better sense of what authentic training is like, as well as get the chance to practice individually unlike in class where exercising is mainly made collectively and not everyone gets to exercise and participate.

"من الأفضل التمرن على الترجمة الشفهية في مخابر متخصصة مع عدد قليل من الزملاء لأنها تحتاج إلى كمية هائلة من التركيز في جو مناسب" .

English Translation:

“It is better to practice interpreting in specialized laboratories with a few colleagues, because it requires a huge amount of concentration in a suitable environment”.

The respondent points to the need to work in smaller groups so that every students gets the chance to practice using the equipments made for interpreting, since all participants only practiced consecutive interpreting and had not been introduced to simultaneous interpreting yet. Practicing in such an environment also helps certain students with personal and public speaking difficulties get over the fear and nervousness of trying and performing in front of large groups. One participant wrote:

"أود أن أتدرب وأتعلم بكثرة وهذا من أجل نزع الرهبة والخوف والقلق وزيادة مهارة التركيز. الترجمة الفورية فريدة من نوعها لكن صعبة بالنسبة لشخص ليس له رصيد لغوي كافي في اللغات مما يجعله يكره الممارسة وخاصة بالنسبة لمن يستحي من أن يمارس أمام الأصدقاء خوفا من أن يخطئ. ولذلك أظن أننا بحاجة لمخابر الممارسة كي يصبح الطالب لا يهاب ومتعود على ذلك".

English Translation:

“I would like to train and learn frequently, and this is in order to remove dread, fear and anxiety and increase the skill of concentration. Interpreting is unique, but difficult for a person who does not have sufficient linguistic baggage in languages, which makes them dislike practicing, especially for those who are ashamed to practice in front of friends for fear of making mistakes. Therefore, I think we need practice laboratories so that the student becomes fearless and accustomed to it”.

This perspective highlights the need to create an environment where learners feel comfortable and encouraged to take risks. It underscores the idea that the psychological and cognitive dimensions of training are just as crucial as the

practical aspects, ensuring that all learners actively engage in the learning process and make meaningful progress. In addition to practical interpreting in specialized booths and labs, participants also expressed their need for actual on-the-ground training and internships to get a sense of what it is like in real-life.

"نحتاج إلى تربصات وتكوينات في أرض الواقع، المشاركة في فعاليات خارج إطار الدراسة من أجل التعود على الترجمة الشفهية وإتقانها والتمكن منها. أما في المعهد فنحتاج إلى مخابر متخصصة وأدوات audiovisuals لممارسة الترجمة الشفهية بعملية واحترافية أكبر".

English Translation:

"We need internships and training on the ground, participation in activities outside the framework of the study in order to master interpreting and get used to it. As for the institute, we need specialized laboratories and audiovisual tools to practice interpreting in a more practical and professional manner".

As previously discussed, experts and practisearchers have consistently emphasized the importance of incorporating real-life interpreting experiences into training programs. This approach is essential for creating an effective and constructive curriculum that prepares competent and qualified future interpreters capable of meeting the demands of the job market. Students seem to understand the significance of it as well and are keen to acquire hands-on experience and become familiar not only with the linguistic and practical aspects, but the technology and tools involved as well.

c. The need for regular assessment and evaluation

Assessment and evaluation have been thoroughly discussed in this research, highlighting their indispensable role in any learning process. Continuous evaluation and measurement of progress are essential to determine whether learning objectives are being achieved. Additionally, assessment is a key component of reflective practice, as it helps learners identify their weaknesses and areas needing improvement. A number of responses mentioned that

students' performances are not evaluated, and while they are often given tasks to perform, the product is often not corrected and little to no feedback is provided. One participant stated:

"أتمنى أن يتم إجراء فحوصات أو تقييمات فردية لمعرفة المستوى الذي وصل إليه الطالب خلال تمرنه واكتسابه للمهارات" .

English Translation:

"I hope that individual examinations or evaluations will be conducted to examine the level reached by the student during his training and acquisition of skills".

This indicates that learners recognize the importance of receiving feedback and guidance in their learning and development process, as trainers, with their greater experience, can identify areas for improvement that beginners might overlook.

To sum up, the results obtained from the students' questionnaire revealed that while the learning atmosphere encourages students to practice interpreting and puts more emphasis on application than theory, the process is often unsystematic and varies from one instructor to the other. The results also indicate surface-level inclusion of cognitive training which requires more in-depth investigation. As we wanted to gain more insight and gather data on multiple levels, we also designed a questionnaire for teachers, featuring qualitative questions that sought insights into their instructional methods and approaches, and whether or not they resort to cognitive exercises in the classroom. Unfortunately, the retrieved responses were insufficient. A major difficulty which we encountered when distributing the questionnaire was finding instructors with the corresponding profile. Compared to teachers of written translation, interpreting teachers are very few and difficult to locate. At the institute, a large number of teachers are practitioners who work as official translators and interpreters and teach at the

same time. The vast majority of them teach written translation while only a few teach interpreting modules and these are generally translators who have experience working as interpreters or have become practisearchers in the field. Due to their busy schedules, contacting and collecting responses from them proved to be very difficult. For this reason, we also decided to also approach teachers at the institute of Algiers since the two programs are fairly similar.

Despite the scarce number of responses, we believe it beneficial and valuable to outline what little data was retrieved as it provided a different insight. The questionnaire was also used as a baseline for our next investigation. The first part of the questionnaire focused on gathering information on the participants' profiles. It asked the participants to indicate their years of experience and the interpreting modules that they taught. All participants had taught interpreting for over 10 years and the modules they taught were sight translation, consecutive interpreting and simultaneous interpreting. The second part of the questionnaire was dedicated to finding out the approaches teachers use in the classroom and whether or not they include any cognitive exercises.

All participants indicated that they prioritize practice over theory and incorporate exercises aimed at enhancing cognitive skills. Below are some examples they provided of the exercises used in their teaching (T refers to teacher):

" Parmi les exercices que j'utilise en cours; ceux de restitution de sens. Je lis un passage, ou je raconte un événement qui s'est déroulé soit sur la scène nationale ou internationale, et je leur demande de me le redire dans la langue cible sans prendre de notes ; et parfois je leur demande de raconter eux-mêmes un événement et à leurs camarades de le rapporter dans la langue cible en se basant sur leurs connaissances pré-acquises aussi".

English Translation:

"Among the exercises I use in class; those of restitution of meaning. I read a passage, or I recount an event that took place either on the national or international scene, and I ask them to repeat it to me in the target language without taking notes; and sometimes I ask them to tell an event themselves and their classmates to report it in the target language based on their pre-acquired knowledge as well". (T1)

This exercise resembles Setton & Dawrant's (2016a) *Idiomatic Gist*, which they recommend to help improve active listening skills and teach students to listen for meaning. While common as a beginner interpreting exercise, the authors recommend a revised version where students first hold a brainstorming session on the subject with the aim of bringing forth all relevant background knowledge. This procedure helps them anticipate themes and terms which may be presented to them and consequently reduces analysis and memory efforts later on during execution.

A second teacher provided notes of the types of exercises but without describing the nature of activities or steps, stating: *"Memory (recalling activities), retrieving data, on-sight swift exercises and deverbalization to name a few"* (T2).

Next, participants were asked to share their views on the current state of cognitive skills training in Algerian interpreting programs. They were requested to indicate the extent of its implementation and the importance of incorporating such an approach using a 5-point Likert scale. All respondents answered that while including practical exercises targeted at improving students' cognitive skills is **very important**; its actual implementation in Algerian interpreting programs is actually **insufficient**.

Finally, the questionnaire concluded with a section concerning the Training of Trainers (*ToT*) in the field of translation and interpreting. Participants were requested to give their opinion on what they regard as most adequate and efficient for training translators and interpreters: receiving specialized training in the pertinent cognitive approaches to teaching translation and interpreting, or drawing from their personal experience and adapting their approaches according to their interactions with students in the classroom?

All responses agreed that both targeted training and personal experience are equally as important and necessary. As one respondent wrote:

"Il s'agit de faire usage des connaissances cumulées pendant les nombreuses années d'exercice du métier (traduction ou interprétation), tout en profitant des nouveautés qui viennent enrichir [la discipline]. Et parfois on est obligé d'adapter les cours au besoins des apprenants".

English Translation:

"It is about making use of the knowledge accumulated over many years of practicing the profession (translation or interpretation), while taking advantage of the new developments that enrich [the discipline]. And sometimes we have to adapt the courses to the needs of the learners".

Thus, it is clear that a coherent and effective interpreter training program must draw on the accumulated experience and expertise of practitioners while also staying updated with the latest trends and approaches in the field.

However, these findings lead us to wonder about what actual measures are being taken to insure that these standards are met. As questionnaires were distributed onsite, this allowed us to hold more in-depth discussions with the participants regarding the overall training of interpreters in Algeria. Multiple teachers expressed their hopes to see a more systematic and better-structured approach to interpreting curriculum design. Similar to the remarks provided by students in the first questionnaire, instructors find some courses and materials to be

irrelevant and only serve to fill time and gaps in the program. In this context, instructors believe that interpreter training should be extended, introduced at earlier stages of translator education, and made more specialized to align with the realities of professional practice and the demands of the job market. To accomplish this, respondents recommend that decisions about curriculum content should be made by boards that include not only didacticians and pedagogues but also practisearchers and professionals from the job market. These individuals are better equipped to understand the realities of the profession and the latest advancements and requirements in the field.

While this preliminary inquiry provided an overall idea of the nature of training of interpreters in Algerian translation and interpreting programs, we wanted to explore further and take a closer look into what goes on inside the classroom, as well as observe learners' attitudes towards their training. Following is an outline of the second phase of our exploratory study, which employs an observational research design.

3.3.1.1 Classroom Observation

At this stage, we relied on observational research in order to acquire a better understanding of how learners are first introduced to interpreting, and the methods and strategies that instructors employ to train students for this new and complex activity.

Objectives

The goal of this inquiry is to observe how interpreting modules are delivered in practice, examine the methods and approaches teachers referenced in the earlier investigation, and analyze the dynamics of interaction between instructors and learners.

Methodology

In this section, we relied on observational research, a valuable method for studying teaching and learning processes, classroom dynamics, and student-teacher interactions in their natural settings.

To better understand the instruction methods used in interpreting courses, we observed study sessions during four periods: November 2022 (3rd Year, 5th semester), October 2023 (3rd Year, 5th semester), December 2023 (4th Year, 7th semester), and March 2024 (4th Year, 8th semester). This approach provided a comprehensive view of teaching methods across different modules and stages of the training program. The total observation time amounted to 6 hours. The aim was to record data on different aspects of the classroom dynamics: the interaction between the teacher and students, the nature of the activities and exercises used in class and the materials used.

- **Observational Research Approach**

There are multiple approaches to observational research, and one of the most common is naturalistic observation. This method involves the description of a phenomenon as it occurs in its natural setting. “It does so by analyzing words

rather than numbers, and by reporting the detailed views of the people who have been studied" (Angrosino, 2007,p.2). Naturalistic classroom-based observations are commonly used to investigate different aspects of learning -such as student and teacher interactions and instruction methods and materials- and for different aims –such as promoting reflective practice among teachers and identifying learning difficulties among learners- (Farrell, 2015).The importance of such an approach lies in that it provides realistic and qualitative data relevant to the actual circumstances the phenomenon occurs under, unlike structured studies that are pre-designed and controlled in laboratories (Gile, 1998). While common in applied linguistics and language learning research, no studies could be found of the use of observational research in investigating interpreting instruction methods. Gile (1998), Pöchhacker (2004) and Sawyer (2004) all emphasize the importance and need for investigating what actually goes on inside the classroom as part of interpreting curriculum research, because it provides data on what they call the 'hidden curriculum', i.e., "the curriculum as experienced by the individual student and teacher" (Pöchhacker, 2004, p.180).

Given the lack of existing observational research directly related to our study, we designed a framework for classroom observations, concentrating on the 3rd-year phase, where we expected the foundational introduction to interpreting skills to take place. This differed from the 4th-year phase, where teaching focuses on specialization and introduces practicing in the different interpreting modes.Our goal was to observe how instructors introduce interpreting to students during the initial stages of their training and whether they incorporate exercises to develop mental skills, as well as metacognitive and reflective strategies, as indicated in the literature, to prepare students for more advanced and challenging interpreting tasks, such as long consecutive and simultaneous interpreting.

At the beginning of training for interpreting, it is often recommended to familiarize students with the basic skills needed for interpreting. For this purpose, Setton and Dawrant (2016a) recommend introducing them to the following everyday practices in the interpreting context:

- Memory, attention and analysis training for listening and understanding;
- Public speaking
- The principles of language transfer, i.e., translation from one language system to another, linguistic interference,…;
- The interpreter's role as a mediator;
- Self-directed learning.

Setton and Dawrant (2016a) also recommend that instructors help learners develop these "pre-skills" through a set of targeted and practical exercises – accompanied by relevant theoretical notions- in order to gradually ease them into interpreting practice (p.79). Similarly, Gile (2005) recommends preparing students mentally before diving deep into interpreting modes and principles, and suggests starting with 'short consecutive without notes' (Gile, 2005). In this interpreting variation, students interpret short sentences and segments that last from 10 to 40 seconds. According to Gile (2005), practicing short consecutive without notes starts at the beginning of training and usually takes a few weeks, and is mainly targeted at training and enhancing students' memory and getting them used to detecting the "logic" of the speech (Gile, 2005, p.136). Linguistic competence is also emphasized in this stage and learners should be encouraged to become familiar with easy, but native and natural-sounding speech (Setton & Dawrant, 2005, p.107).

Taking these principles as a model basis, a scheme was developed to facilitate note-taking on the type of exercises and activities students are given at the beginning of their course during our observational research. Our focus will be on observing whether or not the teacher introduces exercises and activities

aimed at training students' source and target language, memory, listening comprehension and public speaking skills.

Procedure

The research was conducted over three main phases:

- **Pre-observation:**

Before attending the session, we looked up the timetables at the institute in order to gather information on the modules and teaching hours. Our choice then fell on two sessions for the modules titled 'Consecutive Interpreting: Ar/Fr/Ar' with the Spanish group, and 'Simultaneous Interpreting: Ar/Fr/Ar' with the English group. On the first day of research, we approached the teacher and explained our motivation and aim and asked for permission to attend the teaching sessions which we were gladly granted. The instructor introduced us to the group and explained our purpose for attending the session. We would simply be attending as non-participant observers and taking notes.

The classes we observed took place during the early weeks of the students' 5th semester: the first in November 2022 (academic year 2022–2023) and the second in October 2023 (academic year 2023–2024). At this point, students had only attended a limited number of sessions in these modules. While the session with the first group (Spanish) was practical, the one with the second group (English) was mainly theoretical because as the teacher explained, her first encounter with students revealed they had little to no understanding of interpreting as opposed to written translation and were not familiar with basic concepts and definitions of this type of translation. For this reason, basic theoretical sessions were needed before initiating any kind of practice.

- **During the observation**

Using the rubric created for documenting classroom practices (Appendix D), we positioned ourselves in a corner of the classroom at a distance, observing the lesson without any interference. Contrary to our initial assumptions before the

research, we were surprised to observe during the lessons that the teacher employed an approach specifically aimed at developing students' mental skills and competencies. Below is an outline of the key points we documented:

Language

1. Source and Target Language: the use of both SL and TL in interpreting should be an automatic operation and students must be able to juggle between the two easily and process information in both languages in a short time. Students should therefore acquire high listening and speaking skills in both languages, while simultaneously paying attention to the linguistic and cultural differences between the two and aiming to minimize the linguistic interference that is sure to occur. In this regard, the teacher made sure to conduct the lesson in a manner which allows students to put to use both their source and target languages. First (1.a), students were instructed to listen carefully to a video recording in French. They were then asked to give an overview of the topic of the video, still in the source language, and everyone contributed to the discussion with what they gathered roughly. Students listen a second time, and at this stage they start dissecting the speech part by part, sentence by sentence, in the target language, with the help and guidance of the teacher. Along the discussion, the teacher points out grammatical and lexical differences between the two languages and urges students to find the accurate rendition by asking questions like “how would you translate that? Why? What made you choose this particular term?”. The majority of students contribute with their ideas, justify their choices and engage in a discussion collectively with both languages.

The teacher discussed not only the linguistic, but the cultural and societal aspects of the topic in question as well (1.b). She made sure to point out to her students how the same expressions/terms could be translated differently in different contexts, and how the interpreting strategy may differ from one person to another. As the exercise progresses, the students seem to grasp the strategy so

she pauses the video as passages gradually become longer, allowing students to answer accordingly and immediately, without the need to repeat the instructions or ask questions. They seem to have understood what is required of them.

Finally, students were asked to listen to the entire speech attentively and attempt to render it fully in the target language (1.c). They do not succeed in their first attempts, so she repeats it another time, advising them to take some notes to help them remember (it is important to note that at this stage, students are not familiar with the concept of note-taking yet and are only practicing short consecutive without notes).

Targeted Skills

2. Memory

There are many types of memory that serve different functions, so in this part we will be discussing it in general by referring to basic notions such as recall, background knowledge and sequencing of ideas and units of meaning. When discussing and ideas expressed in the speech, students were encouraged to invoke background knowledge and relevant information they might have and relate it to the topic at hand (2.a). As the teacher is listening to students' consecutive renderings, she interrupts occasionally in order to point them out to a detail they failed to pay attention to (2.c) and remind them to render meaning accurately and in the order it was expressed in originally (2.b). This helps them to chunk information into logical units of meaning and view the entirety of the speech as a sequence of units that make up a story, which consequently helps them recall information and details more easily. Additionally, the teacher urges students throughout the exercise to extract the main ideas and meanings regardless of the form, stressing the importance of deverbalization and the visualization of sense in their mind far from the linguistic mould and literal expression (2.d).

3. Listening comprehension

Listening comprehension is one of the most important skills in interpreting and the one which is mostly stressed upon in training exercises. Students are expected to acquire the ability to comprehend the message in the SL quickly and accurately, following the chain of ideas and grasping the exact meanings that the speaker wants to convey. This is not always an easy task, especially if students are not familiar with following speech structure as opposed to written texts. Effective comprehension also helps students retain more information in memory. In order to promote these behaviors, the teacher asks multiple leading questions to help students grasp all the aspects of the message and not miss certain details (3.a).During the theoretical session, the teacher noticed the students' tendency to take down notes while listening to her lecture, to which she acted by urging them to listen carefully and focus on the meaning she was conveying instead of noting down all the details, emphasizing the notion of listening comprehension, speech analysis and retention. She would also make sure to correct incorrect answers regarding meaningful details (3.b), and make sure students render the content in its entirety at the end of the task (3.c). The teacher also made sure to focus on rendering meaning beyond words by asking for all the possible alternative translations (3.d).

4. Public Speaking

Compared to other skills, some instructors may not prioritize the development of students' delivery skills, even though these skills are essential for effectively conveying the interpreted message to the audience. Even if an interpreter successfully comprehends and retains all the information from the source speech, the process can still fail if they lack the ability to deliver the message effectively. This is not only due to insufficient linguistic proficiency but also often stems from psychological factors such as stress and anxiety. The instructor must then target public speaking skills such as intonation, delivery style,

confidence, body language and eye contact. During the practice session, the teacher made sure to invite all students to participate (4.a.) and engage in conversations instead of adopting a teacher-centered transmissionist approach (4b, 4.c.). This puts students at ease and fosters a learning environment where everyone feels prompted to participate. Additionally, she occasionally allowed students to lead the conversation when she noticed that they had understood the instructions and method, listening intently and urging the other students to engage and provide their insights (4.b.)

Theoretical Aspects

5. The Interpretive Theory

The significance of incorporating the principles of the Interpretive Theory of Translation (ITT) has already been emphasized. The theory provides straightforward, accessible concepts that are essential in the early stages of training, helping students transition from the linguistic translation theories they encountered in their initial years to a meaning-based approach that aligns more closely with the demands of interpreting practice. The teacher seems to have grasped this, since as we mentioned earlier she recognized the need to incorporate a theoretical session to introduce these notions (5.a). During practice, she would constantly refer back to the ITT, especially to emphasize the notions of deverbalization and the extraction of meaning based on the extra-linguistic features of the speech (5.b, 5.c)

Materials

6. Audio-visual aids

Finally, another critical aspect, often highlighted in discussions on curriculum design and lesson preparation, is the selection of appropriate materials. Research emphasizing the types of speeches, languages, speech rates, and speaker characteristics underscores that this process is not arbitrary but requires careful

consideration. The selected materials must be appropriate to the level of students, training stage as well as the learning objectives. To achieve this, the teacher ensured the inclusion of authentic videos featuring native speakers (6.a) and covering a range of topics and fields (6.b), while avoiding overly specialized or technical content. The selected topics were appropriate for the students' training level, focusing on familiar subjects such as videos about the interpreting profession (6.c).

Based on all of the above, it becomes clear that the teacher effectively applied the recommended teaching practices aimed at introducing cognitive skills for interpreting to trainees in the early stages of their training. The instructor incorporated a variety of exercises targeting memory, attention, and analytical skills. Additionally, the teacher balanced theoretical explanations with practical activities, allowing students to gradually build their interpreting competencies. This approach aligned with established pedagogical principles, demonstrating a well-structured and thoughtful implementation of baseline cognitive skill development in interpreter training.

Post-observation

Using the questions developed for the first questionnaire, we approached the teacher to gain deeper insights into her teaching methodology and the reasoning behind her instructional approach.

When asked if she followed a specific, researched method based on a textbook or training guide for teaching interpreting, the teacher responded that she did not. She explained that despite her long experience teaching translation, she in fact had no prior training or experience in teaching interpreting, as this was her first time instructing the subject. As a result, she prepared by conducting her own research and gathering materials that could be adapted for use in an interpreting class. She had not even known of the existence of training

handbooks as the ones often mentioned in this study. When asked about her choice of the videos and audio recordings administered in class, the teacher explained that she would look up material that were relatively specialized in nature (educational, political, economic), and especially ones that were directly linked to the practice of interpreting; i.e., videos that would talk about the interpreter's job, the job's requirements and difficulties, personal recounts of interpreters of their experiences and videos on how to become an interpreter. This way, students could practice interpreting all while learning and gaining knowledge about the profession, as she explained. It should also be noted that at the time this study was conducted, the classroom lacked adequate training materials such as speakers or headsets. The room was not equipped with the necessary resources, and students had to gather near the teacher's desk to listen better. The teacher used her personal computer for the exercises, which raises concerns about the availability of proper infrastructure and tools for effective interpreter training.

Overall, the results of the first phase of the observational research offered valuable and interesting information on some of the current teaching methods at the institute, revealing that as opposed to older traditional programs, the current curriculum did involve some kind of cognitive interpreter training. The question remains as to the assessment tools and evaluation of such methods. Furthermore, the short duration of the study did not provide enough data to assess the implementation of self-directed and reflective practices.

In the second phase of the observational research, we attended practice sessions with 4th-year students over two semesters. This time, the focus extended beyond teaching methods to closely examine how trainees handled actual interpreting tasks (in consecutive, simultaneous, and sight translation). We aimed to observe whether they exhibited cognitive challenges or employed strategies, as well as how the instructor addressed these issues. It is also important to note that the

curriculum undergoes annual evaluations, leading to modifications and refinements of the modules and content. For example, unlike previous years, where the 5-year program combined translation and interpreting with a greater emphasis on translation, the academic year 2023–2024 marked a shift toward a Y-model curriculum. This model introduces specialization at the start of the fourth year, allowing students to choose between Institutional Translation and Conference Interpreting (and, as of the time of writing, a third specialization in audio-visual translation has since been added). Additionally, a specialized, well-equipped interpreting laboratory was inaugurated; offering trainees improved training conditions and providing us with the opportunity to observe teaching practices in a more advanced setting. We will now provide an overview of the data collected at this point.

Classes with 4th Year (7th semester) Trainees

The modules in this session were titled "Interpreting Ar/Eng/Ar" and "Interpreting Fr/Eng/Fr," scheduled in total for 4.5 hours per week. Alongside these, other practice modules include Interpreting in the remaining language combination (Ar/Fr/Ar) and Sight Translation. This concerns the English language group as well as the Spanish language group. However, it remains unclear why consecutive interpreting was not included in this curriculum. The observation session lasted for two hours, in which we observed three types of exercises.

- **Exercise 1:** a combination of listening and sight translation

  Students were first played an excerpt audio recording of Noam Chomsky giving a speech about a familiar topic, repeated multiple times to allow them to discern as much information as possible. The teacher explained that the choice of material was to introduce them to the different English accents (American in this case), as they were familiar with British.

Next, a sight translation exercise was to be performed using the transcription of the aforementioned audio. The teacher emphasized that sight translation here is a learning tool- *outil d'apprentissage*- for regular interpreting, not the aim itself. Students would move across the room and enter the interpreting booths to record themselves performing a sight translation of the text before returning to their seats. It was at this point that we observed the room layout more closely, noting how the large oval table in the center, designed to resemble a conference or meeting room, created a more comfortable and practical training environment. This setup allowed both the teacher and students to easily observe and interact with one another. It is also well equipped with the necessary materials (interpreting devices, screen projector, interpreting booths…) that adhere to the standard international requirements.

One by one, the recordings would be played and the class would collectively go through each student's performance to discuss the notable errors (language, content, and delivery). Each student would first analyze and comment on his or her own errors, before getting the teacher's observations and feedback. After offering comments and corrections, the student is asked to render the passage again and pay attention to the improvements made. In addition to identifying errors, the teacher also explores potential reasons behind them, such as lapses in concentration, linguistic interference, or limited vocabulary. She also provides feedback on the students' delivery. This process is repeated for each student, allowing all of them to receive specific and personalized feedback. At the end, students return to the booths and record themselves a second time, this time comparing the first and last recordings in order to self-evaluate.

- **Exercise 2:**

This exercise is similar to the first one, with differences in the procedure, materials and language combination. While the first exercise was from English into Arabic (B-A), this one was from French to English (C-B).An audio excerpt

from a French TV program discussing recent global developments was used. The speaker delivered the content at a relatively fast pace, resembling a briefing style. Although the speech was information-dense, it was structured in a way that allowed it to be divided into clear, distinct segments. The speech was repeated a second time, after which students repeated the task of recording the sight translation of the speech transcript. Before reviewing the students' recordings, the speech passage was first discussed and explained. The teacher stressed the importance of fully understanding the meaning of the source text before interpreting, as any misinterpretation could disrupt and hinder the process. The same process of the first exercise was then repeated in this one.

Observing students' performances provided deeper insights into their challenges, even when performing relatively simple tasks like sight interpreting. This will be valuable for designing our next experiment. The session highlighted that students still struggle to listen for meaning and effectively segment speech into meaningful chunks. When the speech becomes longer, they often become discouraged and stop listening altogether.

Classes 4th Year (8th semester) Trainees

The same interpreting modules are included in this semester. The module in this session was titled "Interpreting Ar/Fr/Ar".

- Exercise 3: Simultaneous Interpreting from Arabic (A) to French (B)

A video about the 2022 Winter Olympics in China, discussing various aspects of the game and issues related to the event. Students were asked to discuss the content of the video with their peers, and then research specialized terminology and unfamiliar concepts as preparation for the interpreting task. Once finished, students were instructed to work in pairs inside the booth, with one student interpreting and the other assisting with difficult terms or when the interpreter encounters challenges. The pair takes turns so that each student gets to perform both tasks. Afterwards, the class gathers again and listens to the product

collectively, analyzing and offering feedback. Written evaluation is also asked of the students observing outside the booth. Once all pairs take turns, the audios are then played and analyzed. The teacher asks the class to offer their observations: who did they believe was closest to the source speech? In what way and why? Afterwards, the interpreter himself or herself is asked to self-evaluate, with the teacher constantly reminding each one of the value of constructive criticism, or what he called *'de bonnes guerres'*. The class discusses the possible explanations for their shortcomings (e.g. stress, lack of concentration, speed of the original audio). After listening to all the students' contributions, the teacher provides their own assessment, highlighting gaps, offering possible explanations for errors, reassuring students that such mistakes are normal, and emphasizing the importance of focusing on meaning during interpreting.

The exercise mainly aims to familiarize students with teamwork in the booth, a crucial aspect of professional interpreting, and what it involves—such as coordination, cooperation, synergy, and compatibility. The concepts of teamwork during simultaneous interpreting were introduced theoretically in earlier lectures, making this exercise a practical application of those principles, designed to simulate real-world interpreting scenarios. It is also worth noting that the video used in the session was sourced from a specialized repository for translation and interpreting materials, specifically curated for educational purposes. This repository provides authentic and contextually relevant content tailored to the needs of interpreter training, ensuring that the materials align with the learning objectives and simulate real-world interpreting scenarios.

3.3.2 Main Takeaways

- **Highlights**

Through our observation of the teacher-student interactions in typical interpreting practice sessions, we remarked several positive aspects of the teachingmethods employed. First, there was the use of authentic, diverse, and appropriate materials which ensured that students were exposed to realistic and relevant content. The approach fostered inclusivity by allowing all students to participate and receive evaluations, ensuring equal opportunities for growth. It also encouraged peer feedback and self-reflective behavior, helping students develop critical thinking and collaborative abilities. A student-centered approach was promoted by actively involving learners in lesson development, increasing their engagement and investment in the learning process. Moreover, the use of simulated learning environment inside the interpreting booths provided students with realistic practice scenarios. Additionally, the teachers boosted students' self-esteem and confidence through continuous reassurance and constructive feedback. Finally, they made sure to help students identify challenging areas and offer possible solutions, enabling students to address their weaknesses effectively. These elements collectively contributed to a comprehensive and supportive learning environment, addressing several of the questions posed by students involved in the previous questionnaire research. In addition to the exercises outlined earlier, students are assigned tasks to complete outside the classroom that directly connect to their training. These include preparing presentations or researching cognitive skills like memory and listening. Such assignments foster self-directed learning, which is essential for effective interpreter training.

- **Limitations**

On the other hand, several areas warrant closer examination and evaluation. First, questions arise regarding the appropriateness of the difficulty level of certain tasks, as observed through students' frustration and tendency to give up

on completing exercises. This suggests a need to better align task complexity with students' current skill levels. Second, the overemphasis on sight translation exercises poses a challenge. While these exercises often focus on literal translation, requiring students to repeatedly correct and reformulate until an acceptable rendition is achieved, they risk diverting students from the core principles of meaning-based interpreting. In real-world scenarios, interpreters do not have the luxury of reviewing and revising their interpretations multiple times. Therefore, such exercises, while useful in moderation, should not be overused, as they may create unrealistic expectations and hinder the development of skills essential for real-time interpreting.

At the end of both sessions, discussions were held with both teachers to try and get their perspectives on several key issues, including training methods, curriculum design, and how students engage with the training process.

Both teachers have extensive experience teaching interpreting. When asked if they relied on specific manuals or handbooks, the first teacher explained that she primarily draws on her years of teaching experience, supplemented by her own research, readings, and engagement with experts, renowned interpreters, and practisearchers through conferences and workshops. She noted that many textbooks and manuals are often incompatible with Algerian students' needs. The second teacher echoed this, emphasizing the need to adapt exercises to suit students' actual circumstances, as even basic tasks like shadowing prove challenging due to linguistic, cultural, and personal barriers. He highlighted that most Algerian trainees struggle with language proficiency, unlike students in other programs who are admitted after passing aptitude tests, including language proficiency exams. This raises concerns about admission and selection criteria for interpreting programs, which he suggested need revision. Additionally, he pointed out students' lack of motivation and reluctance to engage in tasks outside the classroom, with only a few exceptions. These insights underscore the need for tailored approaches and systemic improvements in interpreter training.

The findings from this observational research, combined with the earlier exploratory study, have yielded valuable and critically needed insights into the current state of Algerian interpreting programs.

3.4 Conclusion

At the outset of this study, we established two primary research questions, the first of which being:

1. To what extent is a cognitive training approach incorporated into Algerian interpreting programs?

We hypothesized that little to no cognitive training is afforded to interpreting trainees in Algerian programs. This exploratory study addressed this question, revealing that contrary to our initial hypothesis, a certain level of cognitive training is indeed incorporated, especially during the early stages of the program, as part of efforts to introduce trainees to the cognitive skills essential for interpreting. While this implementation is hardly systematic, relying mainly on instructors' own efforts and experimentation, it holds promise for future advancements and the implementation of a more structured and generalized approach. The results of this study also revealed that a major part of the inadequacy of the previous interpreting programs could be attributed to the lack of the proper resources and suitable learning environment. With today's transition into a comprehensive and intensive 5-year training program across the country, the new structure offers a great opportunity for improving the learning-teaching quality and adapting the training outcomes to the job market requirements. By allocating sufficient time, providing appropriate equipment, and reducing the number of students per course, instructors will be better positioned to implement effective training methods tailored to the individual needs of each trainee.

In the previous chapters, we demonstrated the importance of integrating a cognitive approach, particularly during the early stages of interpreter training, in

order to facilitate skill acquisition and tackle the difficulties that are certain to arise from such a complex practice. We argue that greater emphasis should be placed on implementing this approach to enhance the effectiveness of the new interpreter training program in the country. With this in mind, we now turn to the second part of our practical studies to address the second research question.

Chapter Four:

Investigating the Impact of Cognitive Skills Training on Students' Performances

4 Introduction

The second part of the practical research, detailed in this chapter, centers on implementing a cognitive approach during the initial stages of interpreter training through a quasi-experimental research design. This aims to investigate how such an approach might influence students' interpreting performance and their overall training experience. It seeks to answer the second research question of the current study about the impact of cognitive training on interpreting performance

We hypothesize that integrating a cognitive approach at the preliminary stage of interpreter training can significantly enhance students' performance, by improving their skill acquisition process and equipping them with fundamental interpreting-specific skills. Additionally, we believe that this approach fosters positive learning attitudes by encouraging reflective practice and promoting self-directed behaviors. In this chapter, we will provide a detailed account of the methodology used to answer the research question. Given the substantial volume of this section, we found it more appropriate to present the results and discussion in a separate chapter.

4.1 Research Design and Methodology

4.1.1 Research Design

The quasi-experiment design follows a pre-test/post-test structure, conducted with the first cohort of the latest Interpreting program at the Translation Institute of Oran, Algeria. Initially, a pre-test is administered to assess students' baseline performance and identify key challenges. This is followed by an intervention phase designed to address those challenges. Finally, a post-test is conducted to evaluate the impact of the cognitive approach on students' interpreting performance. A quasi-experiment was chosen over a full experiment due to the

specific circumstances of the study, particularly those related to the participants. The quasi-experiment was also followed by a questionnaire administered a month later for the purpose of collecting additional qualitative data.

4.1.1.1 Participants

The 2023-2024 cohort is the first group of students to specialize in interpreting as part of the newly established MCIL program. A total of 17 students were admitted to the program, with English, French, or Spanish as their B language. Given the small class size, all students were grouped together throughout the program. This presents two significant challenges: the limited number of participants makes it impossible to establish a control group and an experimental group (a fundamental requirement for rigorous experiments), and the variation in language combinations among students complicates the process of accurately and objectively assessing different variables. Out of the 17 students, 16 took part in the quasi-experiment. Among them, 9 students belonged to the Arabic-English-French language combination group, while the remaining 7 students were in the Arabic-Spanish-French group. These students were introduced to the fundamentals of interpreting during the previous academic year and had brief practical experience in both consecutive and simultaneous interpreting. Their initial exposure and reflections on this experience were explored in the first part of our study (the exploratory questionnaire).

The quasi-experiment took place over a seven-week period (November 2023 – January 2024) during the students' seventh semester, which marked the beginning of their specialization in interpreting.

4.1.1.2 Experimental Procedure

Pre-test Phase

Throughout the experiment, training sessions were conducted weekly, each lasting three hours. During the pre-test session, students were introduced to a brief overview of conference interpreting, covering its history, evolution, modes,

challenges, and the specific requirements needed to pursue a career as a professional interpreter. The primary objective of this training phase is to familiarize students with the interpreter's profession, including their responsibilities, roles, and the diverse challenges they will encounter while performing this intricate task. Over the course of the semester, students are expected to gain a deeper understanding of these aspects in preparation for their future careers. Most importantly, training should help students understand the difficulties interpreters face when performing, especially cognitive ones, and equip them with strategies to overcome them. Through the implementation of targeted exercises and reflective practice during this course, students will develop the ability to recognize their cognitive limitations and acquire strategies to identify and address these challenges, ultimately enhancing their performance. All of these points were discussed and explained during the first session.

- **Procedure:**

At the end of the first session, the experiment was explained to the participants and they were asked to take part in the pre-test which will be a consecutive interpreting exercise (without notes). We concluded that a consecutive interpreting experiment was more appropriate for this stage of training, as students had not yet been introduced to note-taking techniques and were still becoming acquainted with the interpreting process. Additionally, practicing without note-taking places greater emphasis on working memory, which is a crucial and advantageous step for building foundational skills applicable to both consecutive and simultaneous interpreting.

The students will be listening to a short clip in their B language respective (English, French or Spanish). The topic of the clip was familiar to all participants, as it revolved around a recent global issue that had garnered widespread attention, making it unlikely for anyone to be unaware of it. The

three clips are all approximately of the same length, register, information and speed. The rationale for selecting the speech rate choice is based on the recommendations by Seleskovitch and Lederer (1989), who argue that the ultimate goal should be to enable trainees to interpret at the standard speech rate of 120-220 wpm, and that beginning with slower speeches only makes it harder for students to learn to listen for sense, prompting them to concentrate on linguistic meanings of individual words instead (p.22).

Each participant will listen to a speech divided into three segments, separated by two pauses. They will hear the speech in their B language and then interpret the meaning into their A language (Arabic) when the clip pauses. This process will repeat until the recording ends. Although the exercise was designed as short consecutive interpreting, participants were permitted to take notes if they felt it necessary. Each student's interpretation was recorded for further analysis (The speech for the pre-test audio is transcribed in Appendix H).

Table 4: *Pre-test audio details*

Speech	Length	Word Count	Speech Rate
English	00:44 seconds	114	155 wpm
French	00:46 seconds	117	153 wpm
Spanish	00:53 seconds	122	138 wpm

*The average speech speed rate is 150 wpm (2.5 words per second).

Intervention Phase

After careful analysis and evaluation of the pre-test recordings, an intervention plan was designed to address the main issues encountered in the first phase. To ensure clarity and ease of understanding in this section, we chose to follow the four-stage lesson framework proposed by Setton and Dawrant (2016b) (Preparation, In-Class Activities, Performance Critique and Teaching, and Wrap-Up).

- **Lesson Plan (Week 1)**

- **Preparation:**

The objectives of this first lesson were to introduce the main theoretical concepts related to interpreting, and introduce them to the notion of 'cognitive load', then to the mental skills involved in interpreting. An exercise was also selected to put some of the theoretical aspects that will be discussed into practice.

- **In class:**

The first half of the session focused on introducing students to the three core stages of interpreting, as outlined by the ITT: Listening and Analysis, Deverbalization, and Re-expression. These stages were explained in detail:

1. **Listening and Analysis:** This is the first step, where the interpreter listens attentively to grasp the message and the underlying ideas being communicated.
2. **Deverbalization:** Once the ideas are understood, they are stripped of their original linguistic form and transformed into a mental image or concept in the interpreter's mind, leaving behind the specific words used.
3. **Re-expression:** This mental image or concept is then reproduced in the target language, not necessarily word-for-word but in a manner that is accurate and equivalent in meaning, regardless of the original linguistic form.

Once these concepts were grasped by students, it was brought to their attention that due to the complexity of the interpreting task and the wide range of difficulties that are bound to occur when interpreting, errors are frequent and the interpreter may encounter some problems that are attributed to the *cognitive load* imposed by this process. For this reason, the interpreter must develop a unique set of skills to facilitate this process. Consequently, a question was posed: What set of skills or competencies did they consider essential for an interpreter?

After hearing students' responses (attention, concentration, good listening, confidence, good memory), the three main cognitive skills picked for this study were presented: Active Listening, Working Memory, and Public Speaking.

Listening & Analysis ⟶ Active Listening
Deverbalization ⟶ Working Memory
Re-expression ⟶ Public Speaking

Each skill aligns with a specific step in the interpreting process. A detailed definition and explanation of each skill followed. The distinction between active listening and other forms of listening—such as passive, superficial, and selective—was clarified. Additionally, working memory was defined and differentiated from other memory types (short-term and long-term), with its key functions highlighted, including problem-solving, attention allocation, reasoning, and chunking. Furthermore, the features of public speaking relevant to interpreting—such as delivery, body language, communication goals, and the interpreter's role—were also discussed.

After explaining these concepts and ensuring students had a clear understanding, the theory was connected to practice by referencing the Pretest and applying these concepts to the students' experiences from the previous week. The performance indicators for these skills were outlined, and each student received their test sheets, which included their results and scores for each indicator. They

were asked to review their results to identify their strengths and weaknesses. In the latter half of the session, we introduced the first exercise designed to address these weaknesses.

The exercise selected for this session was Setton & Dawrant's (2016a) *Idiomatic Gist.* The exercise aims to familiarize students with the process of listening to meaning instead of words. Following the authors' recommendations, a text in the students' B/C language (in this case, French, the common language among all participants) was selected. The text focused on a recent, widely recognized topic and featured "linguistically striking, stylistically sophisticated" language (p. 89). While the text might initially seem challenging to translate, it conveyed ideas that were familiar and easy to comprehend. Before delving into the text itself, the title and main topic of the text (*Guerre à Gaza: les "allies" arabes d'Israel sortent leur veto au Sommet arabo-musulman*)were presented to the students. They were then asked to brainstorm and recall all the knowledge they had about the topic, including terms in various languages, context, and the latest developments. Each student contributed a piece of information, which was straightforward given the subject's recent and familiar nature. Once a solid understanding of the topic was established, the exercise was put into practice.

- **Performance Critique and Teaching**

We instructed students to listen attentively and actively to the passage being read, focusing on understanding the message being conveyed. They were encouraged to visualize the events in their mind, as if listening to a story. The first paragraph, a brief introduction, was read aloud verbatim in a slow and clear manner. Afterward, we asked the students to express in Arabic (their A language) what they had just heard. Questions such as '*What was the passage about?'* '*What is the main idea?'* and '*What have you understood?*' were used to guide their responses. Each student provided a brief response, sometimes recalling specific terms, expressions, or even ideas expressed in fragmented or

incomplete sentences (indicating they were still focusing on individual words rather than the overall meaning). We then asked the students to summarize their understanding in a concise, clear sentence, using their own words. As each student shared their interpretation, their peers contributed additional details, clarifications, or corrections.

We read the passage again, this time using gestures and vividly describing the scene to help students visualize it more clearly. We explained how, in our own minds, we could picture the summit: a large conference room with a round table, representatives from each participating country, speakers, national flags, and so on. This imagery was meant to illustrate how they could deverbalize the message into a mental picture, making it easier to remember and retell later. The goal was to help them understand the process of transforming spoken words into a conceptual image that could be more effectively retained and expressed. This process was repeated with each passage, adding details to the bigger picture. As more information on the event was provided, the context of the event was invoked again and the class would collectively discuss the background information, provide additional details that students knew from other sources, and how it all related back to the main issue. For example, it was mentioned in the text that large-scale demonstrations had taken place in London in response to the ongoing aggression against civilians in Gaza, so students recalled seeing similar significant protests in other major cities, such as New York.

During the discussion of the information, we revisited certain phrases and idiomatic expressions from the text, such as *" a pris une tournure décevante"*, and "*des manifestations massives… témoignent de la préoccupation international"*.When encountered for the first time, these expressions could present challenges during interpretation if the listener fails to focus on the intended meaning and the purpose behind their phrasing. To address this, students were asked to rephrase these ideas as simply as possible, resulting in multiple interpretations that all conveyed the same core meaning. For instance,

the first expression *" Le sommet arabo-musulman en Arabie Saoudite a pris une tournure décevante"* would literally and linguistically be translated into:

"اتخذت القمة العربية/الإسلامية ب[المملكة]العربية السعودية منعطفا مخيبا للآمال" .

"The Arab-Islamic summit in Saudi Arabia took a disappointing turn".

This same meaning when deverbalized could be expressed as:

"انتهت القمة العربية الإسلامية بالسعودية بشكل مخيب للآمال"، "لم تحقق القمة العربية الإسلامية بالمملكة العربية السعودية الآمال المرجوة"، "لم ترق القمة العربية الإسلامية إلى مستوى التطلعات"، "لم تكن نتائج القمة العربية الإسلامية إيجابية" ...

"The Arab-Islamic summit in Saudi Arabia ended in disappointment", "The Arab-Islamic summit in the Kingdom of Saudi Arabia did not meet the hoped-for expectations", "The Arab-Islamic summit fell short of expectations", "The outcomes of the Arab-Islamic summit were not positive"...

Through leading questions, explanation and collective deconstruction of the text and its ideas, students were able to give multiple accurate interpretations of similar expressions and they slowly began to understand how it's convenient- sometimes necessary- to focus on understanding the *gist* of the message, and how it is being conveyed, as sometimes the ideas expressed hold the speaker's intentions, opinion, prejudice, emotion, cultural understanding…etc. These elements must be carefully considered and focused on to ensure they are accurately re-expressed in the target language. At the same time, and while discussing these ideas, we made sure to always invoke background knowledge and each student was encouraged to share everything else they knew about each idea, as well as their analysis and understanding of what it suggests. At one point, the text mentioned that the UN Security Council's efforts to enforce a ceasefire were unsuccessful due to vetoes by the United States and France. This had happened approximately two weeks prior to this session. During the discussion of this section, a student pointed out that just a few days earlier,

France had reversed its stance, as President Emmanuel Macron recently reappeared and called for a ceasefire. Students were both surprised and impressed to find that this exact idea was expressed in the next passage that was read out. This enabled them to understand that by tying the information given to them to previous knowledge and putting things in their context, they can grasp the logic of the text and its ideas, and anticipate what could come up next. This process would ultimately reduce the cognitive effort needed to process and analyze the input, making it easier to retrieve and reformulate the information effectively.

- Wrap-up: The key points of the lesson were summarized, and students were encouraged to stay consistently updated on current affairs. This practice would not only prepare them for topics covered in future sessions but also enhance their background knowledge, intellectual growth, and cultural competence.

In conclusion, this exercise not only deepened students' understanding of listening for meaning and visualization but also highlighted the importance of analyzing daily events and building a broad base of world knowledge (across all their working languages) to enhance listening comprehension.

- **Lesson Plan (Week 2)**

- **Preparation:**

The exercise chosen for this lesson was a variation of Setton & Dawrant's (2016a) *Discourse Outlining***,** an exercise similar to Gillies's (2017) *Mind Maps.* Similar to how a written text usually has a clear structure and organization, spoken speech also follows a logical structure and sequence of ideas. However, while it is relatively easy to dissect a text and divide it into distinguishable parts, ideas and units of meaning (paragraphs, sentences, phrases…), it is more difficult and challenging to do the same with an oral speech, especially for beginner students and even more specifically when listening in the foreign languages. For this reason, it is important to teach students the ability to segment the speech into discernable sections and units of meaning that would make it easier to understand the meanings conveyed, follow the logic of the speech and recall ideas and details better. One suggested exercises designed for this aim is discourse outlining. The goal of the exercise is to guide students in breaking down the speech into a clear, visually structured outline.

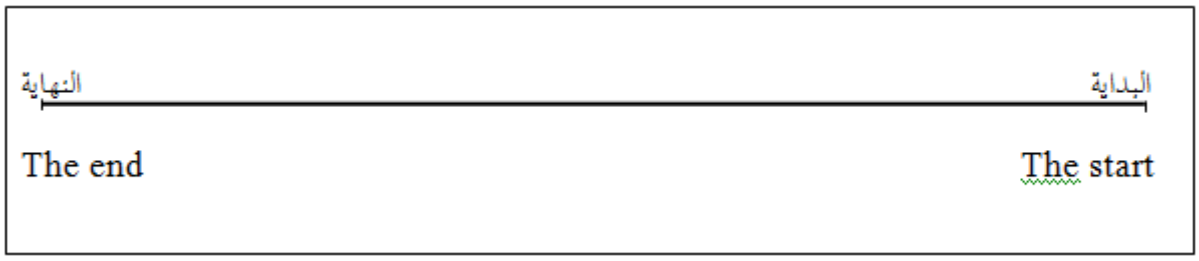
- **In class:**

The concept of speech structure was introduced to the students. We explained that, just as they identify units of meaning in written texts, their goal while listening should also be to identify such units. In spoken speech, these units of meaning are not always confined to single sentences or phrases but can extend over longer segments, where even minutes of speech might convey a single idea or unit of meaning.

To practice, we picked a 3:20min video titled "الترجمة الشفوية في الأمم المتحدة"*Interpreting at the United Nations*".[1] The speech is in Arabic (students' A language) and the speaker is a native Arabic speaker talking about her job as a UN interpreter. As recommended by the authors, the speech is of general interest

[1]https://www.youtube.com/watch?v=ps_2IVunaq8&t=2s

to the students and is highly-structured, meaning it follows a clear structure with an introduction, body "divided into clear sections, with a few main points connected by clear links and transitions" (Setton & Dawrant, 2016a, p. 95), and a conclusion. On the white board, a line was drawn across the board, and students were instructed to view this line as representing the entire length of the speech.



- **Performance Critique and Teaching**

Students were instructed to listen attentively and actively to the speech which was played in its entirety. Once finished, we asked students to relay, still in Arabic, what the speech was about. Questions such as "Who is speaking?" and "What is the main topic?" were posed to guide their responses. A few students rendered the overall meaning of the speech, in simple terms and with a few details. They appeared to understand the overall message and collaboratively contributed main ideas and key points that others might have overlooked, though they did not recall every detail or talking point. At this point, we explained that we would be listening to the video a second time, this time *chunking* it across the line into segments that represent meaningful units. We asked students to listen attentively, and to raise their hands every time they believe a full unit of meaning has been expressed.

The video was played a second time, and a student raised her hand at the completion of the first sentence that said: *"اسمي لما"* "*My name is Lama*". We were about to challenge the idea when some of the other students expressed their disagreement that they do not consider this to be a full unit of meaning. We elaborated by reminding the class of the concept of 'meaningful chunks', which

they seemed to have grasped immediately, as they successfully identified the unit when we restarted the video and managed to signal the pause at the right segment:

"اسمي لمى. أنا من مصر، وأعمل كمترجمة فورية. لغات عملي هي العربية والفرنسية والانجليزية. أعمل في الأمم المتحدة منذ ثلاث سنوات" .

"My name is Lama. I'm from Egypt and I work as an interpreter. My working languages are Arabic, French and English. I have been working at the United Nations for three years".

Each segment was to be titled. Students chose to title this segment "*Introduction / مقدمة*". Below the title, bullet points were added to outline the details and sub-points covered in the segment. In this segment for example, the speech was reduced to: "*Introduction/مقدمة: name/الاسم, age/السن, job/المهنة, years of experience/سنوات الخبرة*".

We continued with the rest of the video, and students noted how segments progressively grew longer, but could still be identified and labeled. To state another example:

"كمترجمة فورية، يقوم عملي على توفير ترجمة شفهية، آنية، للاجتماعات التي تدور هنا في الأمم المتحدة. أي أنني واحدة من الأشخاص الذين يجلسون في المقصورة، ويترجمون حتى يتسنى للمندوبين أن يستمعوا ويتحدثوا باللغات الرسمية الست للأمم المتحدة" .

"As an interpreter, my work consists of providing an oral, simultaneous translation of the meetings held here at the United Nations. This means that I am one of the people who work in the booth, and provide an interpretation so that delegates may listen and speak in the UN's six official languages".

This segment was titled "Nature of job / طبيعة العمل".

The rest of the clip was segmented accordingly, resulting in the following outline:

We explained to the students that the concept we had just demonstrated is a mental process that should naturally occur in their minds as they listen to a speech. With practice, they should be able to automatically and easily segment the speech and see its components and main parts in their mind's eye. Now that they have a visual of the information provided in the speech, they should be able to reformulate everything that was said in a clear and organized manner, following the chain of ideas and linking them back together, with the help of the notes that were taken down. Naturally, these notes are not literal transcriptions of the speech, but memory aids that ought to help them recall the details within each segment. For example, in the second segment titled *"Nature of job",* only one expression was noted underneath which was *"Interpreting delegates' meetings in the UN's languages"*, whereas the full segment contained longer sentences. Understanding the full idea made it unnecessary to note down all the details, and the short phrase that was picked was enough to help students recall exactly what was said, i.e., the phrase would easily be rendered as: *"As an interpreter, my work [Interpreting] consists of providing an oral, simultaneous translation in the booth of the [delegates' meetings] held here at the United Nations in the [UN's] six official [languages]."*For example, writing down "UN's languages" only was enough for students to remember the full sentence as they were already aware that the UN had six official languages. This

information was brought up and discussed previously when listening to the speech the first time.

To put it better into perspective, we compared the process to compressing multiple files into a single *zip* file. The files represent the main ideas containing the essential information. Their task is to decompress and extract those ideas and details, and then reconstruct the original speech as fully and accurately as possible. Students were first asked to render the speech in Arabic in its entirety, and they were able to easily recall the information with most of the details, as their peers would intervene to add missing information. Then, they were asked the second time to render the speech in their B language. Each student took turns delivering their interpretation, with some interpreting in French, others in English, and one rendition in Spanish.

- **Wrap-up**

To reinforce the exercise, we played a second video—this time a longer and more complex clip of a news report discussing recent events. The clip featured two speakers: the reporter and a doctor providing testimonies, both speaking in French. We asked students to listen and mentally count the number of units or "chunks" present in the speech. The vast majority of students—except for two—successfully identified the correct number of chunks in the full video, demonstrating their understanding of the task and their ability to listen for and detect the main ideas. The video was played a second time, pausing at the end of each segment as marked by the students, allowing them to provide their interpretation in Arabic immediately.

In conclusion, by the end of the exercise, students had gained a clearer understanding of units of meaning in spoken discourse. The activities in this lesson reinforced the objectives of the previous session, particularly the focus on listening for meaning rather than individual words or sentences. Students gained a deeper understanding of how to visualize speech as a coherent, logical unit with interconnected sequences. Additionally, creating an outline not only helped

them grasp the concept of chunking but also introduced them to summarizing and note-taking skills, which will be essential for handling longer consecutive interpreting tasks with notes later on. This is why Gillies (2017) includes this type of exercise in his book on teaching note-taking for consecutive interpreting, recommending it as a foundational step before introducing formal note-taking techniques. He argues that outlining a speech this way allows students to see "(1) an overview of the whole speech on a single page and (2) how the different parts of the speech fit together.", which in turn makes it "relatively easy to recall most of the original speech from it" (p.21). This aligns precisely with the goal of learning note-taking for consecutive interpreting, which involves listening to extended segments that can span 10-15 minutes and encompasses multiple ideas. The process students practiced in this exercise should eventually become more structured, evolving into a systematic method where the speech is outlined using symbols and abbreviations rather than titles and bullet points.

On a different note, and in order to help guide students in their learning process not only in the classroom but outside in their personal training, we began our introduction to reflective thinking and practice. At the end of the session, students were assigned a task to begin that day and continue regularly: journaling and documenting their thought processes while practicing any exercises at home. The journal must contain essential information about the type of exercise, the language combination and direction, the materials used as well as the targeted skills. Whether repeating the exercises done in class or practicing consecutive and simultaneous interpreting, students were asked to record themselves and to note down each and every thought that comes to their mind, whether when performing or after reviewing their recordings, especially the thoughts that come up when pausing or encountering a difficulty. In order to help them understand better and guide their process, we provided them with a handout featuring 20 reflective thinking statements in Arabic, each addressing

common challenges students face during interpreting. (Appendix E). They were encouraged to practice and document the process daily for maximum outcome.

- **Lesson Plan (Week 3)**

- **Preparation:**

The session began by retrieving students' assignments regarding the reflective practice activity given the previous week. Despite clear instructions to maintain a journal and document their exercises and experiences throughout the week, only a handful of students completed the assignment. Some mentioned they had noted down a few general difficulties, while others admitted they had not done it at all. For this reason, a more thorough explanation of the process and its significance was necessary. We showcased an example of a well-executed assignment from one of the students on the projector screen to illustrate what was expected (Appendix F).

The students had their work organized, each page containing the date, the type of exercise (consecutive, sight translation,...), the language combination/directionality and the title of the topic chosen. This was followed by bullet points and sentences detailing the parts that the student struggled with while performing. For example, in a simultaneous interpreting exercise from French into Arabic, the student wrote statements such as: "*a problem with synchronization, Inability to remember all statistics, deleting many sentences, long pauses, inability to keep up with the speaker"…*etc. These notes enable trainees to identify their specific challenges and offer us, as instructors, valuable insights to tailor our lessons in ways that effectively address those difficulties.

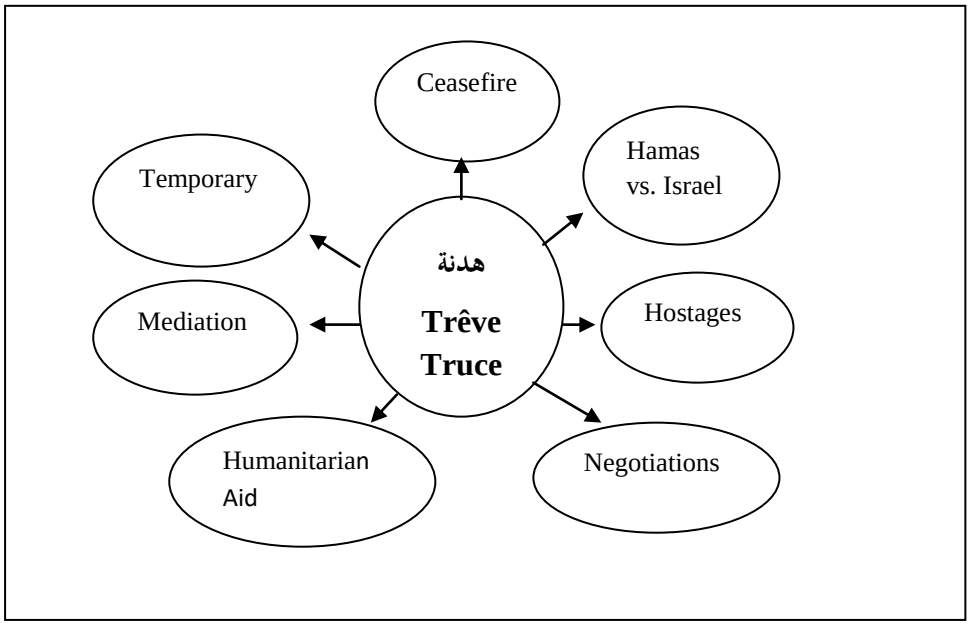
We encouraged students to adopt this methodology, but the key question we asked them to reflect on was: *Why? How is this beneficial?* We then introduced the concept of Reflective Practice (RP). We presented the term in all three languages and asked if anyone had heard of it before. Everyone responded

negatively. We proceeded to explain the principles and significance of RP. Reflective Practice, as used by professionals in work environments where challenges arise and require critical thinking and problem-solving, is a crucial and essential practice for all students, especially for interpreting students. A significant part of their work involves self-reflection, self-regulation, and the development of mental skills, making RP particularly valuable for their growth and improvement. As beginner students that aim to improve and gain expertise, interpreters in their early training need to acquire skills and strategies that will help them be self-aware of their lacunae and issues while practicing. While the instructor serves as a facilitator and guide, the majority of the personal work is done outside of the classroom. Furthermore, the instructor is only available in the few years of training, and will not be able to accompany learners across the following stages of their training, particularly in the professional world. Therefore, students ought to learn how to critically evaluate themselves and figure out what they struggle with and how to solve it. Metacognition, introspection and retrospection are effective tools towards achieving this aim. This is why we emphasized to students that they must invest time and effort into these tasks if they aim to improve—not only in this specific subject but across all academic and professional dimensions of their training. Once all of these principles were established and understood, we resumed our lesson plan.

- **In class:**

To continue the work initiated the previous week in the context of visualization and outlining, we introduced another activity that can help students draw up maps in their minds to facilitate the retrieval of information and background knowledge, while also activating terminology and encouraging anticipation. On the center of the white board, we drew a circle and wrote a term relating to the lesson's main topic inside. We asked students to give the equivalent in their respective languages, and then instructed them to brainstorm every possible

term, expression or information related to the term, not in general however, but in relation to what they knew were relevant news that particular week. All students proceeded to share their thoughts in all different languages, so that by the end, the white board had a web drawing of all the terms and information which could be used to build up knowledge and discourse on the main topic in questions.



Looking at the map, with all terms in Arabic,French and English, we proceeded to discuss the topic itself.

- **Performance Critique and Teaching**

Using the map as a reference, we facilitated a discussion about the main event and the preceding incidents, recalling as many details and occurrences as possible to construct a timeline and visualize the sequence of events. This helped create a narrative of sorts, complete with a plot, characters, and the progression of events- *What happened? When did it happen? Who was involved? What were the causes and consequences? How did opinions on the matter differ?*

Through these guiding questions, we sought to build a thorough understanding of the topic rather than maintaining a superficial grasp of the events. We

emphasized to students the importance of actively analyzing information rather than passively accepting it without critical processing. This not only helps them store information in their long-term memory, but allows them to activate critical thinking, consider all possible interpretations, opinions and prejudices involved, and in consequence enable them to see the different perspectives of people involved in the question at hand. This is important to the interpreter as a mediator who takes on the role of the person they interpret for. He ought to be able to mirror what they speaker thinks, feels and expresses, regardless of his/her own personal understanding and opinions.

Furthermore, this operation helps the interpreter anticipate themes, ideas and terminology related to the topic they interpret from so they can expect what ideas would be discussed or what might come up during the speech. In order to put this better into perspective, we introduced Sight Translation as an exercise with a text directly linked to the topic discussed (Appendix G). We explained the importance of practicing sight translation not only because it may be used as a mode in meetings where the interpreter could be asked to interpret documents, but because the exercise itself is relevant as more interpreting in conferences is currently done in the simultaneous-with-text mode. This means that students must not only work on their listening comprehension, but reading comprehension as well. ST is also a great exercise to gain knowledge and terminology, and develop linguistic competence.

First, we instructed students to skim the text to identify the main idea. After sharing the main idea, they observed that the text included more specific details that had not been covered earlier. Next, we asked students to focus on the first part of the text which contained three short paragraphs. We asked them to read the first paragraph quickly, but attentively, and provide a simple interpretation of what was written into Arabic. From the very first attempt, students struggled to articulate their thoughts as they tried to retell the information while

simultaneously following the text. This led to literal translation attempts, adhering to the source language's structure, which differs from the target language, and caused difficulty in following the text's logical flow. This is a common error among beginners as they are still not used to paraphrasing and extracting sense from the first attempts. Sight Translation adds another layer of difficulty as opposed to spoken discourse since the source speech is always present in front of the interpreter's eyes. When concentrating on listening only, the oral message fades and a good active listener is able to recall meaning instead of words as was demonstrated in the first lesson. Reading, however, forces the interpreter to see those words and the structure of a written speech differs from the spoken one, making it more stylistically challenging. When introducing ST principles before initiating the exercise, we highlighted these differences and explained them in detail. The challenge for the students was to learn how to balance the characteristics of written and spoken text and seamlessly transition between the two.

In order to facilitate that, we took time to deconstruct and work on the first paragraph together. First, we would read it in its entirety and understand the exact message.

"Alors que de nouveaux otages, dont trois Français, ont été libérés ce lundi 27 novembre, en soirée, par le Hamas, et que 33 prisonniers palestiniens doivent également être relâchés par Israël, plusieurs acteurs appelaient à une prolongation de la trêve humanitaire à Gaza''.

At first glance, students immediately focused on the easily identifiable elements—familiar names (Hamas, Israel, Gaza), the date (Monday, November 27th), and the figures (33 Palestinian prisoners, three French hostages). Because these were easy to grasp, all students chose to begin with one of these details and then struggled as they attempted to complete the rest of the information.

For example, they would begin by saying: **"***33 Palestinian prisoners..."* and then pause and struggle to finish the sentence. Furthermore, many who could finish the sentence would actually provide false information such as *"33 Palestinian prisoners* **were** *released"* while the text says *"the prisoners* **are set to be** *released".* Additionally, upon a second, more thorough reading, it becomes clear that the main verb and action in this paragraph are not centered on the details of the hostages' release but rather on the call to extend the truce. For a reader who lacks familiarity with linguistic complexities and approaches the text superficially without focusing on comprehension, this can often be difficult to notice. This showed that similar to listening comprehension, students have difficulties in reading comprehension, which in this case must be executed effectively and in a short time. Therefore, we asked student to pay attention each time they read to:

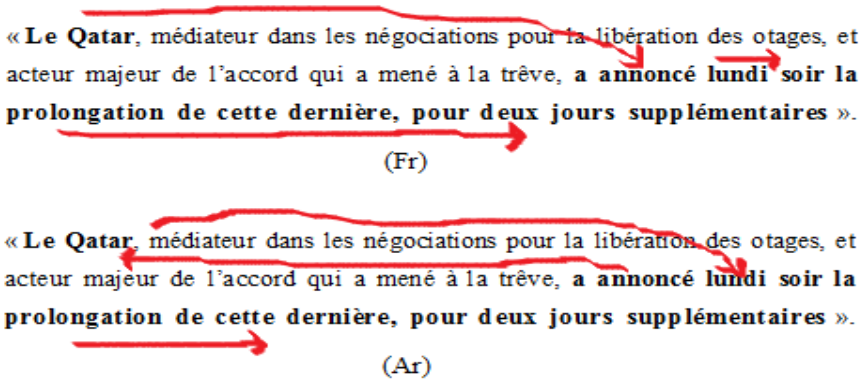
- **First**: both the language they are reading in and the language they are interpreting into, keeping in mind their respective structures (e.g., SVO, VSO).
- **Second:** identifying the logical flow and sequence of the parts of speech.

In this paragraph, for instance, the sentence begins with a subordinate clause while the main clause is put at the end. Students were asked to read again and pinpoint the main clause or the main Verb and the action it describes. Because the SL is French, once the main clause is located, the reader must find the Subject. Whether reading or listening, students were told to always ask themselves '*Who* did *what*?". Viewing a speech or a text this way helps them follow the sense without much emphasis on how it is being said. It should be looked at as some sort of trail that they ought to follow or a puzzle to add pieces to in order to have the full picture. Going back to the example then, the main point here is not that three French hostages were freed or that 33 prisoners are expected to be released, but that following these events, multiple actors in the

deal have called for an extension of the truce in order to work-out more terms in the peace talks. Having read the passage a final time with this in mind, students could at last understand what they were required to do, and we asked them to apply this method when reading the next passage which was written in a similar way, with a main clause separated by two subordinate clauses in the middle.

*"**Le Qatar**, médiateur dans les négociations pour la libération des otages, et acteur majeur de l'accord qui a mené à la trêve, **a annoncé lundi soir la prolongation de cette dernière, pour deux jours supplémentaires**".*

Having shifted their focus from a literal and linear into a more comprehensive way of reading, we now had to add another layer by aiming towards the TL and the re-expression of the message. While interpreting from and into similarly-structured languages such as French and English does not pose a great challenge in terms of expression and sentence structure, the case differs when you move from French into Arabic where the former begins with a Subject and the latter with a Verb. Thus, when reading for interpreting, students should mentally take this principle into consideration and process in a bilingual manner. A quick first glance should allow them to locate the subject and verb and continue to build the rest of the sentence onwards, then immediately afterwards as they begin to interpret, the direction shifts by looking at and rendering the verb, the subject then the rest of the sentence in Arabic. This is what a rough illustration of the process looks like:



So in Arabic it becomes:

"أعلنت(announced) قطر(Qatar) ليلة(evening) الاثنين(Monday) عن تمديد الهدنة (the prolonging of the truce) ليومين إضافيين(for two days additional).".

When discussing the differences between the SL and TL, it's important to highlight that these differences extend beyond just structure to encompass all linguistic aspects, which vary across languages. Another common error that could occur in this example relates to noun genders (masculine/feminine). While this may not be an issue in English, it is significant in other languages. For instance, in the ST example, "*Le Qatar*" is masculine in French but becomes feminine in Arabic, requiring the verb to agree with the subject's gender correctly. With enough practice, the interpreter learns to automatically consider all of these aspects not only when performing sight translation, but in simultaneous-with-text as well. These exercises also help with the development of the linguistic competence and can therefore allow students to interpret and render the speech more eloquently and with lesser language-transfer errors.

- **Wrap-up:**

These major points were elaborated, illustrated and explained to the students. Applying these strategies with the following paragraphs, students grew more familiar and at ease with the exercise. With enough practice in the future, students should acquire the ability to easily look at the text, extract meaning and actually see the equivalent words in the target language in their mind's eye while interpreting. The process was repeated with the rest of the text. The passages were read, understood and discussed to add more details to the bigger picture and then interpreted. Once each paragraph was dealt with separately, we asked each student to render the full text from start to finish by applying the

same method. As a consolidation exercise, we ended the session with a short consecutive exercise of a video on the same topic.

- **Lesson Plan (Week 4)**

- **Preparation:**

At the end of the previous session, and along with the reflective practice exercises that they were required to do, we asked students to prepare a topic to present the following week. The topic should be of general interest and preferably related to the week's recent events. They were to choose any language they like, preferably one that they would like to improve. Therefore, for this session, each student was to stand in front of class and deliver a speech. The speech ought to be delivered in a clear voice and manner, respecting eye contact and body language, and organized in a logical and coherent manner.

- **In class:**

As the first student stood up to deliver their speech, we asked the rest of the students to pay close attention and try to understand the message that was to be conveyed to them. The first speech was in English, and was a retelling of the latest developments in a recent political topic. The speech was clear and not linguistically challenging –with occasional grammatical and syntactical mistakes- and was relayed in coherent and clearly distinguishable segments. The student first spoke in a shy and nervous manner, but slowly grew more comfortable after our remark and encouragement. Once the speech finished, we turned to the rest of the class and asked students to give an overall idea of what their peer had talked about.

- **Performance Critique and Teaching**

Although we had not anticipated this, the majority of class jumped to quickly contribute what they had understood and retained, starting by giving titles of the main ideas the student had discussed. One student had written titles she gave to

the main speech segments while listening. This showed that students started implementing the chunking and discourse outlining principles discussed in previous lessons. To rehearse and consolidate the exercise, we drew the outline and complemented it with the details given by the class, and then a few students were asked to interpret the speech into French and Arabic.

Once the *content* discussed and interpreted, we then asked the class to give their perceptions and remarks concerning their classmate's *delivery* for constructive feedback. Students noted signs of nervousness such as looking down, low incomprehensible voice at times and repetition. We also brought to the student's attention her unconscious act of repeatedly removing and reclosing the marker cap in her hand while speaking. The student admitted that she had not noticed it and that she was a bit nervous as she was not used to presenting in front of people. In addition to these remarks, we also highlighted the positive aspects of the students' performance such as the good command of language, the logical sequencing and telling of events, and the fact she had grown more at ease by the end of it.

Addressing the entire class, we brought to their attention again the interpreter's role and personal skills that he is required to have, especially those concerning presentation such as delivery in a confident and intelligible manner. As the session progressed, we remarked that almost all students had difficulties in this regard. The majority had never presented orally in front of class or in other contexts, many of them were stressed and reluctant to stand up and deliver the speech they had prepared. We observed numerous signs of nervousness and a lack of public speaking training, including prolonged pauses, hesitations, repetitions, indistinct murmurs, self-talk, rocking back and forth, hands in pockets, looking down while speaking, and uneven breathing. Two students, however, delivered their presentations eloquently, confidently, and in a well-organized manner. Despite this, the majority of students still require significant

improvement in public speaking, necessitating dedicated lessons with targeted exercises to develop this skill.

As each student took their turn, the rest of the class became more accustomed to the process of first commenting on the content—and then interpreting it—followed by evaluating the delivery, noting the speaker's strengths and weaknesses. The second presentation was in French, and when the student finished her presentation we drew a map on the whiteboard of the main topic and the related terminology and key points similar to the one in the previous lesson. Students began instinctively applying the concepts discussed and learned in earlier lessons, making the process almost automatic and effortless to rehearse. As the presentations progressed, they would immediately engage in discussing the topic, adding relevant information, asking questions, debating ideas, and so on, followed by interpreting across all their working languages: Arabic, French, English, and Spanish. They would then end by commenting on the delivery and pointing to the areas which require improvement while also praising and encouraging their classmates for the positive aspects of their presentation.

- **Wrap-up:**

Ultimately, this oral presentations exercise proved efficient not only in terms of getting students comfortable with confronting an audience and delivering speeches, but also in practicing interpreting and enhancing the skills targeted by these exercises. The presentation topics were diverse, spanning various fields such as culture, education, and technology. They included not only recent political events but also engaging and terminology-rich subjects like artificial intelligence and neural machine translation. We also remarked that students started concentrating and retaining information better, even succeeding in retaining some details such as places, date and numbers without note-taking. For the rest of the presentations, we asked students to do the same outlining but

mentally, without drawing it on the board or their notebooks in order to get used to mental visualization and train their working memory further.

It should be noted that although these remarks are positive and promising, they are mostly the result of collective participation and seem to make tasks easier as each student contributes in filling the gaps. The problem remains that students feel less confident when asked directly or when being the person presenting instead of the person providing feedback. An important insight emerged after one of the final students to present—who reluctantly stepped up after much encouragement and insistence—delivered a strong presentation despite initially struggling to speak and face her peers. As she returned to her seat, she encouraged her partner to take their turn and shared with us that her nervousness and stress stemmed from the fears expressed by her peer. However, once she started speaking and focused on the subject, her attention shifted away from her insecurities and worries to the topic itself.

This revealed that a lot of times, the fears that beginner students face are unfounded and can easily be overcome with guidance and reassurance. Oftentimes, students struggle at the beginning due to inexperience and basic fear of the unknown, and it is crucial and required of the teacher to detect and recognize these fears and doubts, and work on fostering an environment where students are pushed to take that first nerve-racking leap to make them aware of their strengths and weaknesses and how to work on them. This shows that the psychological aspect of training is highly relevant and can affect the learning experience greatly, and must therefore be included in training.

Important Note:

In order to observe students' progress and their overall performance better, we attended an interpreting session halfway through the experiment with another instructor inside the interpreting room in order to get more insight into students' struggles and adjust our intervention accordingly. The full account of the session is provided in the previous chapter.

Our main observation during this session was that despite the instructor's constant insistence on delivering meaning and the importance of deverbalization and re-expressing the ideas regardless of the words and form, students still failed to render the meaning and kept getting stuck on the same passage arguing over the proper reformulation and the literal translation of the speech. This resulted in spending long periods of time over the same passage and this point to the drawback of using sight translation exercises. As the exercise progresses, students forget the essence of the exercise and the reality of the interpreting task. Therefore, it is preferable not to rely too much on sight translation exercises except for specific goals such as training for simultaneous with text –and in this case accompanying the audio with the text-, and to strictly guide students and constantly remind them of the main task by imposing time restrictions and demanding that they render the message with more emphasis on the content than the form.

Another significant observation is that students still struggle to listen actively and store information efficiently. This was clearly evident in the next session with the same exercise, this time interpreting from C to B language. The recording was played in its entirety, twice. The passage was a news summary from a TV news program relaying the latest developments in a recent topic. The passage was relatively long, stylistically-challenging, delivered in a relatively fast pace and dense with information that was distinguishable and could be

segmented into four main units. We asked students whether they had retained anything or taken down any notes, and the majority answered in the negative, with a few stating that it was generally talking about the week's latest developments in the recent events. Only one student took down some notes which consisted of a literal transcription of a sentence said at the beginning after which she had given up listening altogether. Everyone expressed similar remarks and that they could not keep up with the listener's pace and the major influx of information. The same remark of the previous exercise persists, as students still interpret while trying to find the best and most accurate rendition, losing time despite the instructor's constant reminding to focus on meaning and re-invoking the interpretive theory and its principles.

Another critical issue that needs attention is students' linguistic weaknesses. Frequently, the discussion would deviate from the topic itself to addressing misunderstandings and even correcting students' grammar and language use. By many scholars' standards, this should not be an issue that interpreting trainers should deal with as students admitted to interpreting programs must first be assessed to make sure their language proficiency meets the standard requirements. However, this does not apply in this context, as previously discussed, since the students in this study represent the first cohort admitted to the program, and admission requirements have not yet been established or implemented. This issue was also expressed by the instructor in our discussion following the session, where she expressed the drawbacks of the situation and how oftentimes the discussion deviates from interpreting to language itself, and students must constantly be corrected and given language rules and provided with tips to work on improving their language competency such as reading and listening in their respective languages.

Overall, this observation session provided much needed insight into the current reality of students' performances and struggles, and we aimed to draw from our

notes more ideas and strategies to implement in our skill acquisition training with more exercises targeted at dealing with these difficulties.

- **Lesson Plan (Week 5)**

- **Preparation:**

The aim of the lesson was to address the difficulties noticed during our observation, particularly comprehension, background knowledge use and deverbalization. It was important to emphasize to students the significant impact that analyzing daily-acquired information, retaining details, and building knowledge can have on their interpreting performance. Students seem to have an expectation of being able to interpret a speech only when knowing the subject, having the terminology in both SL and TL, and listening to a simple and clear speaker. They appear to view it as an isolated, one-time task that they prepare for only when called upon. The reality cannot be farther from this. The ability to interpret effectively is acquired through a long and constant training, and through incremental building of knowledge which can only be achieved through research and a curious mindset that actively engages with all the information encountered daily.

- **In class:**

To better illustrate how an interpreter listens and swiftly delivers the equivalent without getting bogged down by translating individual words—as beginners often do—we introduced Gile's (2023) Language Availability and Gravitational models.

The High vs. Low Availability Listener model illustrates what happens in the interpreters' minds as they receive verbal input and process it in order to give the equivalent in TL.

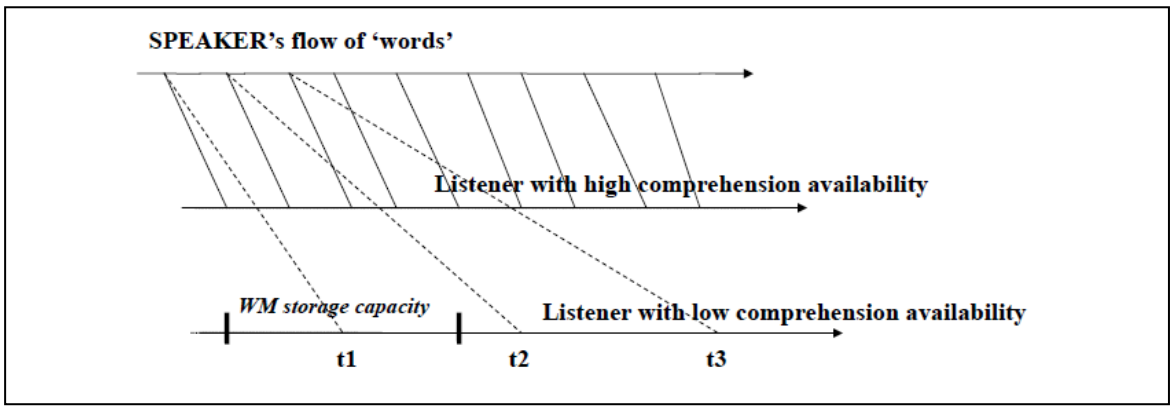


Figure 8: *Gile's (2023) model of High Listener Availability vs. Low Listener Availability Model*

(*Note*.From "The effort models and gravitational model clarifications and update", By Gile, D. 2023. http://doi.org/10.13140/RG.2.2.20178.43209. p.22

While a High Availability Listener is able to quickly process and come up with the interpretation, a Low Availability Listener struggles to process the words and stumbles when trying to recall terminology, translation and information related to it from the long-term memory. The main reason for that is explained by the gravitational model which shows how linguistic units become harder to recall the less they are used as opposed to them being quickly summoned the more the interpreter is familiar with them and employs them.

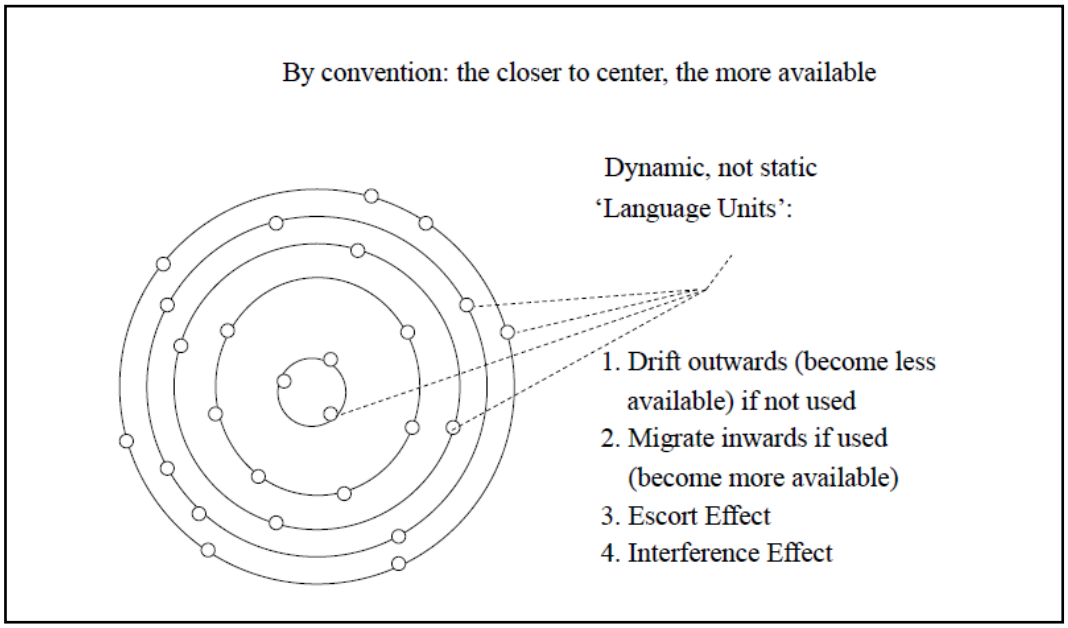


Figure 9: *Gile's (2023) Gravitational Model of Language Availability*

(*Note*.From "The effort models and gravitational model clarifications and update", By Gile, D. 2023. http://doi.org/10.13140/RG.2.2.20178.43209. p.23)

To make this concept clearer, we asked students to listen and attempt to provide the equivalent words instantly (from French into Arabic). The list of words included:

ONU (UN)
Secrétaire General (Secretary General)
Aide Humanitaire (Humanitarian Aid
Cessez-le-feu (Ceasefire)
Bande de Gaza (Gaza Strip)
Cisjordanie (West Bank)
Blocus (Blocade)
Carnage

The words were all familiar and directly related to the topic discussed in class multiple times, yet as the list progresses, they get less common and each word is used less often than the one before it. While students managed to immediately give the Arabic translation of the first five words, they stumbled upon the sixth and took seconds to think, and stopped altogether upon the seventh and eighth until one student remembered their translation.

We asked the students to reflect on why they stopped at that moment precisely, despite knowing the words, then we referred back to the gravitational model explaining that the words they struggled with were within the passive zone, and needed to be brought into the active zone, which can be done through consistent practice, extensive reading and the actual use of language. At this point, students began to understand the importance of practice. One piece of advice we offered was to introduce small changes to their daily routines, ensuring that each habit contributes to their goal of continuous learning. This approach makes practice and training more manageable, seamless, and less likely to lead to discouragement or boredom. Examples include listening to language podcasts,

reading informative content online, and following general-knowledge or language-related accounts on social media platforms. It was also important to practice speaking and hold regular discussions and conversations in all working languages in order to employ and consolidate the linguistic units learned.

The next exercise was aimed at enhancing deverbalization, visualization and the building of meaning.

- **Performance Critique and Teaching**

While the regular steps for interpreting are listening, extracting meaning and then delivering it; in this exercise, we decided to reverse the operation in order to help students focus on the meaning and how to build it logically in their minds before interpreting it. At first, without giving any context, we showed the class a video with no commentary. The video from *Agence France-Presse* (AFP) was related to the events of the week and was showing footage of a particular event that occurred the previous day[2]. A minute long, the video showed images across the streets of the West Bank as a result of a general strike in protest against the ongoing aggression on Gaza. All of this information was left out, and we asked students to look closely and try to formulate an idea of what it could possibly refer to. After the video ended, we asked the class to give their thoughts and proceeded to guide their brainstorming through leading questions. For example, when they look at the scene in the picture below, *What did they see? Where could it be? Who was involved? Why did it happen? What events lead to it? What was the result?*

[2]https://www.youtube.com/watch?v=FlKFJxTh1ik

At first, students could clearly tell that it was showing a general strike, but they could not give any further details. When we asked them to guess where it was happening, they gave out random answers before agreeing that it was certainly in an Arab country, judging from writings on street signs. When we confirmed this idea, they gave some suggestions such as Tunisia, Lebanon and Jordan before a student finally said Palestine, the West Bank. From this point onwards, things became clearer as they began recalling details and collectively adding pieces of information to paint the full picture, similar to completing a puzzle.

Based on the brainstormed information, it was deduced that the video showed the empty streets of a city in the West bank with no sign of everyday life. Everything was closed, from shops, to schools and banks. This came in protest against the ongoing aggression on Gaza, entering its 70th day, and over the US vetoing the UN Security Council's resolution demanding an immediate ceasefire.

The students responded to the guiding questions by providing all relevant information and details, including those not seemingly related to the video. For instance, one student elaborated on the vote for the resolution, explaining that 13 members voted in favor, one member abstained (the UK), and one voted against

(the US veto). By the end of the discussion, a summary of all these ideas was written in a simple paragraph in Arabic. The paragraph contained all the main ideas and important details as well as relevant terms such as 'general strike', 'ceasefire', 'Gaza strip', 'UN Security Council'…etc. At this stage, we asked the students to watch the next video we were about to play and observe how closely it aligned with the paragraph we had just written and the ideas it conveyed. The video was titled **"***Cisjordanie – Grève en solidarité avec Gaza", "West Bank – General strike in solidarity with Gaza".* The following is a translation of some parts of the video:

"Looks of ghost towns. The streets of Ramallah, East Jerusalem, Hebron and Nablus are almost deserted this Monday. Residents of these towns began a general strike to protest the Israeli ground incursion into the Gaza Strip... [resident testimony] …The strikers who demand a ceasefire in Gaza also denounce American support for Israel. The United States vetoed a United Nations Security Council resolution calling for an end to the fighting… [resident testimony]"

Unsurprisingly, the content of the video largely matched the ideas outlined in the collaboratively written paragraph, along with statements from citizens at the location where the report was filmed. Furthermore, the additional information inferred and contributed by the student regarding the US veto was also mentioned, as it directly related to the events depicted in the video. This exercise effectively demonstrated the significance of gradually building knowledge, retrieving background information, and making inferences, all of which are essential components of preparation for any interpreting task. It also reinforces the idea that interpreting trainees ought to pay attention and critically analyze the information they receive constantly, preferably in all their working languages, so as to facilitate terminology retrieval as demonstrated earlier through the gravitational model.

- **Wrap up**

For the remainder of the exercise, the rest of the video segments—featuring statements from individuals and additional details about the event—were played, and each student took turns interpreting. At the end, we encouraged the students to attempt summarizing the entire video's content in clear, well-structured sentences without relying on any written notes. They were asked to retain as many details as possible and present them in the correct sequence, serving as an additional memory-enhancing activity.

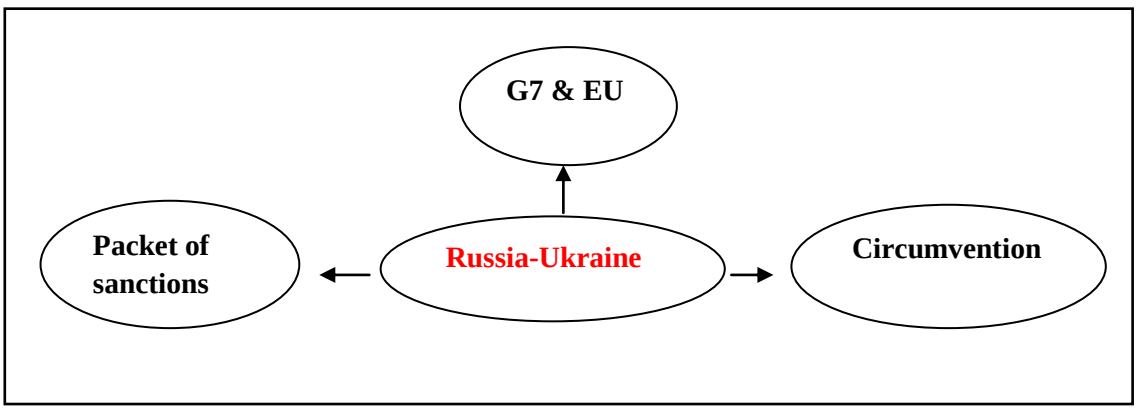
- **Lesson Plan (Week 6)**

- **Preparation:**

Observing students' lack of cultural and knowledge competence, we deemed it essential to dedicate more time to developing this skill. Basic listening and memory exercises had proven ineffective without sufficient prior material to build upon. The exercises in this lesson would focus on teaching students how to do research, how to analyze new information and link seemingly unrelated topics. Additional objectives include training students to collaborate in pairs and groups to develop teamwork skills, as well as enhancing their public speaking abilities.

- **In class:**

On the whiteboard, a topic was provided in a web diagram:



At first, students were asked to provide the background information on the center topic known to all of them which is the war between Russia and Ukraine. This was a familiar topic which had been prevalent in the political and economic scene for two years, so it was not difficult for them to provide relevant information and give an overall idea about the topic. However, the students did not provide any specific details or recent developments about the conflict that could explain the links between the main subject and the three terms associated with it in the diagram. The majority had not even heard of terms such as packet of sanctions, G7 and circumvention, hence the purpose of this exercise.

- **Performance Critique and Teaching:**

Students were divided into pairs and assigned a term each. They were given 30 minutes to conduct research inside the classroom on each of their assigned terms. The objective was to look up the terms, find their definitions, how they relate to the main topics and their translations in their working languages, as well as the translation of any related terminology/expressions. By the end of the allocated time, each student will present their findings and explain the context to the class. While students were conducting the research, we would observe their attitudes and provide insight and guidance when necessary. For example, a pair of students remarked that they did not know how and where to get the information necessary from, as there were too many sources and too much data. In this context for example, they were advised to look up the definitions first and then read recent news articles in order to put the term in context and understand how it related to the main topic. Additionally, when reading similar articles they would start to notice similar terminology and language, which they ought to pay attention to and note down as well. Another observation was that some students preferred to work individually. To address this, we emphasized the importance of collaboration and teamwork, particularly for interpreters who will eventually share booths with colleagues in professional settings. The pair was advised to

discuss their findings, plan their work and distribute tasks for more efficient results.

Afterwards, each student was asked to stand and present their team's work. As each presentation went along, we would ask leading questions or demand clarification on some notes. Compared to the first time they had given presentations, the students seemed more at ease when expressing themselves in front of their peers. The aim was that by the final presentation, the entire class would have a thorough understanding of the topic, acquired new knowledge and terminology, and practiced their speaking skills. The discussion proved efficient and students gained better understanding of the topic as well as the links between the terms which at first glance seemed unrelated. Some students also provided valuable information which would prove to be helpful and relevant to the videos used in the interpreting assignment afterwards.

After completing the first part of the lesson, the second activity focused on active listening, emphasizing the ability to discern meaning despite accents, background noise, and challenging or ambiguous terminology and expressions. This exercise built on the background knowledge gathered during the first activity. Two videos were used for this exercise: the first one directly connected to the diagram and included key terms and main information related to the topic[3], while the second one provided a broader perspective, offering additional context and insights into the global issue[4].The first video, "*L'UE adopte un 12e paquet de sanctions contre la Russie" / "The EU adopts a 12th packet of sanctions against Russia*", was a news report in French, but also containing excerpts from an interview with an expert in English, so the students could practice the exercise with segments both from their B and C languages into A.

[3]https://www.youtube.com/watch?v=w9zKOQYgIME&t=34s
[4]https://www.youtube.com/watch?v=rUpfEj3LVdw&t=3s

The video was played and students were asked to listen actively, concentrate, and pay attention to the visual aid as well in order to build meaning. Once a meaningful segment was provided, we paused the video and asked students to attempt to give an interpretation. The majority could give an overall rendition but not as concise and complete as the original. They remarked that this first segment provided the information discussed previously and noticed that it was easier to recognize meaning and provide its interpretation since exact expressions and terms were looked up earlier. For example, the first sentence used '*train de sanctions'* instead of '*paquet de sanctions'*, a synonymous expression which students found to be frequently used when researching. Additionally, the segment's main information focused on the nature and types of sanctions included in this "12th package," which specifically targeted the diamond industry—a detail elaborated on by one of the students during her presentation. The students also remarked that had they not researched or learned this information prior, it would have been nearly impossible for them to grasp this meaning from a first listen. This highlighted the significance of background knowledge and how it helps reduce the heavy cognitive load that arises in its absence.

With one challenge addressed, the focus now shifted toward reallocating the efforts that would have been spent on information retrieval to concentrating on looking beyond style and language use in order to deverbalize meaning. The first segment read as follows:

"L'Union Européen adopte un 12e train de sanctions contre la Russie. Ce nouveau paquet validé Lundi, vise en particulier le secteur diamantaire. Les 27 interdisent l'importation des diamants russes extraits, traités et produits en Russie ; ainsi que les diamants traités et produits dans d'autres pays''.

To give one example from this except, let us consider the expression :*"Les 27 interdisent l'importation des diamants russes extraits, traités et produits en Russie ».*

During the first listen, an untrained ear would likely stumble upon “les 27” or “the 27” for two reasons: first, not recognizing that it refers to the EU, and second, because it represents a common stylistic feature in French, especially in contexts like news reports and political or economic discussions. Naturally, being able to quickly discern these layers takes practice and familiarity with the field and language relevant to it, so it would be unreasonable to expect students to recognize and master this skill this early on in their training. Instead, the aim of this exercise is to guide the students towards building this competence by stressing the need for constant personal training and knowledge acquisition, and how to employ it. Continuous reflective practice is therefore crucial, and students must recognize that without sustained effort and hard work, overcoming these challenges and achieving their goals would remain nothing more than wishful thinking.

- **Wrap up:**

At this stage, our role is to help them analyze incoming information, use logic to extract as much information as possible with the help of the context and previously acquired data, and finally be able to formulate it in the target language in simple, meaningful words. As they practice more and gain experience, they will naturally enhance their cultural and linguistic competencies, making active listening and deverbalization easier and more automatic. This progression allows them to focus on refining their style and improving their target language production. This is even more challenging and important to work on in language pairs that are structurally and stylistically different to a significant extent such as Arabic and English.

This same strategy also addresses another challenge students faced during listening: the speaker’s accent or delivery. The first challenge involved the English speaker’s British accent, while the second pertained to the French reporter’s tone and diction. It is important to introduce these elements as part of the general training and in parallel with the skills targeted by these exercises so

as to familiarize students with the reality that the speeches they will work with will not always be given in clear and standard enunciation. As a matter of fact, it is more likely that it will not be the case. Therefore, while practicing active listening and doing interpreting exercises, it is also essential that they simultaneously diversify their speeches- and speakers in particular- so as to get them used to different accents, tones and registers.

However, it is advisable for the instructor to avoid introducing difficult or less common accents initially. Instead, exercises should be gradually leveled up to prevent making the tasks overly challenging, which could discourage students or hinder their progress.

- **Lesson Plan (Week 7)**

- **Preparation:**

For the final lesson in the intervention phase, a comprehensive exercise was chosen to integrate all the skills previously targeted in the lessons. Additionally, it aimed to give students a sense of the interpreter's role by having them perform consecutive interpretation between two interlocutors (their peers).Through this exercise, we aimed to simulate a real-life scenario, allowing students to observe and reflect on the areas where they struggled and needed further improvement.

- **In class:**

For each dialogue, three students would sit in front of the class: two acting as "clients" and one as the interpreter. The dialogue topics varied from relatively simple and familiar scenarios, such as a doctor-patient appointment, to more complex conversations requiring advanced terminology and background knowledge, such as discussions on tourism, the economy, and a recent event related to illegal immigration and cross-border issues.

The language combinations also varied depending on the working languages of the "interpreter" and "clients," reflecting the differences among students. This diversity can be seen as a positive aspect, fostering a multilingual discussion

similar to what interpreters will encounter in their future professional work. The small number of students in the classroom also allowed each student to participate and alternate between performing as an interpreter (emphasizing the need to exercise active listening and working memory efforts) and as a client (working on their delivery and public speaking skills).

- **Performance Critique and Teaching:**

At the start of the exercise, the three students positioned themselves facing their peers in a setup that mirrored consecutive interpreting: the interpreter sat in the middle, slightly behind the speakers, in a posture that allowed them to listen and speak comfortably. These positioning principles had been discussed in earlier lessons, supplemented with video examples of professional interpreters when covering the topic of the interpreter's role. Once positioned, the topic was introduced briefly in order to give the interpreter time to consider it and retrieve relevant background information and terminology. The dialogues given to the 'clients' were segmented into clear and logical units of meaning that would start easy and grow gradually longer and more complex in order to challenge the interpreter's active listening and memory skills and put them to the test.

Key Observations:

- Some students had a problem with public speaking and started off timidly, speaking in low tones and reading out their parts nervously. We would therefore pause and remind them of the importance of speaking in a clear and audible manner not just for the sake of the audience but to facilitate the interpreting task for the interpreters as well. Most of them grew more comfortable as they progressed through the task. The same also applied on some interpreters who would not speak clearly or loudly enough when giving the interpretation. We also noted some pronunciation and intonation errors, particularly when students spoke in their B languages. While this served as a valuable exercise for the interpreters, as they will undoubtedly face similar situations in their careers, it also highlighted the

need for these students to improve their accents and pronunciation. Mastery of the language, especially oral expression, is a critical requirement for interpreters working in foreign languages.

- The major issue that we observed with most students was the problem of deverbalization and the loss of information due to the focus on the speakers' words instead of meaning. The interpreter would start off giving the first ideas then stumble on certain words or terms and end up forgetting the rest of the speech. They would also repeat sentences or correct themselves or attempt to reformulate the same expression in order to make it better or express it more eloquently. On certain occasions they would take a long pause to think before giving the interpretation, only to end up forgetting the entire idea.
- Some interpreters occasionally thought out loud or whispered to themselves when struggling to recall or find the equivalent word. Others added explanations or provided multiple translations. In rare cases, a few interpreters experienced linguistic interference, using colloquial words or the same language as the original speaker before correcting themselves—a clear sign of nervousness or lack of concentration.

At the end of each group's performance, we first asked the interpreter to share their thoughts and reflect on the challenges they faced during the interpretation. The interpreters highlighted difficulties such as struggling to recall terms quickly, expressing ideas eloquently, remembering details, and feeling stressed when the message became lengthy, even if the idea itself was simple. One interpreter, who delivered a strong performance, also shared the strategies they used to overcome these challenges. These included summarizing the main idea when faced with long passages and forgotten details, providing close equivalents when unable to recall the exact term, and focusing on the next idea when encountering difficult words or segments to avoid missing the rest of the speech.

Once the interpreter finishes, the 'clients' are asked to provide feedback on the interpreter's performance and comments included mostly remarks on the interpreters' nervousness, voice and delivery. Afterwards, the rest of the class is asked to share their feedback on the overall performances of both the clients and the interpreter. This discussion provided an opportunity for all students to reflect on their own shortcomings, learn from their peers' mistakes and feedback, and collaboratively, with the instructor's guidance, propose suggestions and strategies to address and overcome the challenges mentioned.

- **Wrap up:**

As the lesson progressed, the students expressed that they had gotten more familiar with the strategies than when they had begun, and could now get a sense of how to perform, especially in terms of extracting meaning and listening beyond the words. As a result, the later performances showed improvement compared to the earlier ones, even as the speeches grew more complex.

One final thing we noted was also the fact that those who performed better were naturally the ones with better linguistic abilities and a wider range of vocabulary, including in Spanish which is the less common foreign language for the group. The notions of Gile's LAL and HAL were also brought back to the discussion as students could see how even though they knew certain terms and expressions, lack of practice and language use made it harder for them to retrieve those terms quickly, resulting in additional stress and loss of information.

With this final comprehensive exercise, the intervention phase was concluded.

As outlined in the previous chapter, in addition to the earlier observational research, we conducted observation sessions during the intervention phase with other interpreting instructors. This served two primary purposes:

1. To observe the methods and exercises employed by interpreting teachers.
2. To observe students' interactions with the lessons and instructors, identifying their needs to further tailor the exercises and better address their challenges.

Were the exercises and methods used during these lessons different from those in the experiment?

The answer was yes. The instructors integrated their exercises into the broader interpreting training framework. Typically, students would enter the booths, interpret, record their performances, and then return for feedback sessions with the instructor and their peers. Based on the feedback, additional strategies and exercises—such as shadowing or documentary research—were introduced to address specific difficulties. In contrast, the method used in the experiment focuses on developing mental skills before any attempt to interpret. It adopts a bottom-up approach, differing from the top-down approach observed in traditional interpreting classes.

With the conclusion of the intervention, a post-test was administered in order to collect data for the final analysis.

Post-Test Phase

Procedure:

As with the pre-test, the 16 participants returned for a post-test following the same procedure. Three videos of the same topic about a recent event were chosen in the three languages discussing the same key points with minor differences.

The three clips are roughly similar in length, register, and information density, but finding clips with nearly identical speech rates proved to be nearly impossible. Each participant would listen to the speech which is divided into three segments (two pauses), where they will listen in their B language, then render the meaning in their A language (Arabic) once the clip is paused, and the process is repeated again until the end of the recording. While the exercise was a short consecutive, participants were allowed to take notes should they feel the need to. The speech for the pre-test audio is transcribed in Appendix I.

Table 5: *Post-test audio details*

Speech	Length	Word Count	Speech Rate
English	00:54 seconds	100	111 wpm
French	00:46 seconds	129	168 wpm
Spanish	00:40 seconds	133	200 wpm

*The average speech speed rate is 150 wpm (2.5 words per second).

The discussion of the data assessment tools and results is presented in the next chapter.

Chapter five:

Data Analysis, Results and Discussion

5 Introduction

In the previous chapter, we detailed the pre-test procedure and concluded the quasi-experiment. This chapter will outline the data collection and analysis processes, followed by a discussion of the results and their interpretation.

5.1 Data Collection and Analysis

5.1.1 Instruments

5.1.1.1 Audio Recordings

Audio recordings were used to capture students' interpreting performances during both the pre-test and the post-test phases. These recordings provided a reliable means of assessing changes in interpreting skills after the cognitive training intervention. A total of 63 minutes and 24 seconds of data was recorded. All recordings were securely stored on password-protected cloud storage to maintain confidentiality. Each file was labeled with a code (e.g., S01 for pre-test and S01.1 for post-test), to ensure participant privacy and facilitate data analysis and organization. Backup copies were also maintained to prevent data loss.

The recordings were transcribed for detailed analysis. However, assessment was conducted solely by the investigator, as finding independent raters proved unfeasible. Most reliable raters were either unavailable or overburdened with other responsibilities. Additionally, securing raters for all three language combinations involved in the experiment was both challenging and time-consuming, further compounded by time constraints. Ultimately, the recordings were assessed using a rubric specifically designed to evaluate the acquisition of the skills targeted by the intervention.

5.1.1.2 Assessment Rubric

The assessment rubric was specifically designed for this study. It was used to systematically evaluate students' consecutive interpreting performance in both the pre-test and post-test based on cognitive competences. To design and tailor the rubric to our purpose, we drew on the limited available models for consecutive interpreting assessment discussed in Chapter II (Walczyński, 2017; Shafiei, 2024). While the assessment primarily focused on cognitive skills, linguistic competence was also included, albeit weighted at only 10% of the overall grade. This decision reflects the study's emphasis on cognitive performance while still acknowledging the importance of linguistic accuracy in the broader context of interpreting. We also needed to identify key performance indicators relevant to cognitive skill development. To do this, we relied on a number of studies which tackled such indicators, albeit each for separate skills or areas. For example, Wang (2016) investigated indicators for active listening. He identified six main indicators for interpreting students' acquisition of the active listening skill: (a) the ability to make inference based upon the given information; (b) the ability to understand the general message despite unknown word(s); (c) the ability to make summary without distortion of the message; (d) the ability to sort out the implicit logic; (e) the ability to make explanatory translation; and (f) the ability to add introductory or conclusion sentences (p.23).For working memory, we decided to rely on Macnamara's (2012) interpreting cognitive aptitudes model, which outlines the roles of working memory in interpreting such as processing information, retention and retrieval, attention allocation, filtering distractions and chunking. From this, we can extract indicators for the use of working memory such as speech segmentation, full content reformulation, activation of background knowledge, and fast retrieval of terms and expressions. Identifying other indicators is also possible through the various work which tackle separate or distinct skills in training. Pérez-Luzardo (2015) provides valuable data by highlighting various studies

that incorporate pre-interpreting exercises designed to develop specific abilities. These exercises typically focus on targeted behaviors in trainees' performances, enabling the identification of cognitive skill indicators such as analysis, comprehension and inferencing for active listening, as well as diction, fluency, intonation, presentation and imitation for public speaking.

It is important to note that many indicators can be associated with multiple skills, particularly between active listening and working memory. These skills are not isolated but rather a closely interconnected set of processes that complement and interact with one another. Macnamara's (2012) model effectively illustrates this intricate relationship. As such, we aimed to select indicators for each skill that are most relevant and directly tied to them.

Grading System

The grading system evaluates students' interpreting performance based on four categories: Active listening (30%), Working memory (30%), Public speaking (30%), and Linguistic competence (10%). Each category is rated on a 5-point scale:

- **5 (Excellent):** Fully meets all expectations, exceptional performance.
- **4 (Good):** Strong performance with minor errors.
- **3 (Satisfactory):** Adequate but room for improvement.
- **2 (Needs improvement):** Struggles with key elements, frequent issues.
- **1 (Poor):** Major difficulties, does not meet expectations.

The final score is calculated using a weighted formula applied through Excel, and then converted into a percentage for grading using a standard grading scale:

- **85-100%** = Excellent
- **75-84%** = Good
- **60-74%** = Satisfactory
- **50-59%** = Needs Improvement
- **0-49%** = Poor

Post-Experiment Questionnaire

At the conclusion of the experiment, students were asked to complete a questionnaire designed to capture their perspectives on two key aspects of the training process: cognitive skills development and their attitude toward reflective practice. The questionnaire consisted of 15 questions, including:

- Likert-scale questions: to measure students' self-perceived improvement in cognitive skill and interpreting performance.
- Multiple-choice questions: to understand students' attitudes towards reflective practice
- Open-ended questions: to capture personal reflections on the training experience.

5.1.2 Analysis Methods

5.1.2.1 Quantitative Analysis

The experiment involved a pre-test and post-test assessment, with students' performances graded using the assessment rubric (Appendix J).

Descriptive Statistics of the Experiment

Mean scores and standard deviations were calculated for each rubric category (Active listening, Working memory, Public speaking, and Linguistic competence) in both the pre-test and post-test. Frequency distributions were used to analyze performance trends. Finally, score improvements for each category were recorded and visualized using tables and charts.

Inferential Statistics

To determine whether the cognitive training had a statistically significant impact on interpreting performance:

- A paired t-test was conducted (if data was normally distributed) to compare pre-test and post-test scores across the four assessed skills.

- If normality assumptions were not met, a Wilcoxon signed-rank test was used as a non-parametric alternative.
- Effect sizes were calculated to measure the strength of improvement in cognitive skills.

Descriptive Statistics of the Post-experiment Questionnaire

Likert-scale Questions Analysis

Responses were analyzed using mean scores, standard deviations, and frequency distributions. Pie charts were used to illustrate the distribution of responses.

Multiple-choice Questions Analysis

Responses were categorized and displayed using frequency tables, and trends were analyzed to determine the areas that improved with cognitive training.

5.1.2.2 Qualitative Analysis

The post-experiment questionnaire was used to gather students' perceptions of their cognitive skill development.

Thematic Analysis (for open-ended responses)

Student responses were categorized into key themes: Reflective practice perception (acquaintance with the concept, attitudes and applications) and personal reflections on the training approach. Responses were coded manually, and direct quotes were included to illustrate key findings.

Having established the methodology for data collection and analysis, we now present the results and findings of the study.

5.2 Results and Findings

5.2.1 Results

5.2.1.1 Quantitative Results

Descriptive Statistics (Pre-test & Post-test Scores)

First of all, the mean scores and standard deviation for the individual and overall skills, as well as the frequency distribution for the pre-test and the post-test results were calculated. This is to allow us to effectively summarize and interpret the data.

General Trends

As shown in Table 6,the mean score for overall interpreting performance increased from M= 46.25 (SD= 17.49) in the pre-test, to M= 62.12 (SD= 13.86) in the post-test, indicating significant improvement in trainees' performance. The decrease in standard deviation suggests that scores became more consistent after training.

Table 6: *Mean and Standard Deviation for Pre-test and Post-test scores*

Descriptive Statistics						
Test	Category/Skill	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test	Active Listening (AL)	16	1	4	2,19	1,109
	Working Memory (WM)	16	1	4	2,25	,931
	Public Speaking (PS)	16	1	4	2,44	1,153
	Linguistic Competence (LC)	16	1	5	2,44	1,209
	Overall Score	**16**	**20**	**82**	**46.25**	**17.49476**
Post-Test	Active Listening (AL)	16	2	5	3,31	,946
	Working Memory (WM)	16	1	5	2,81	1,047
	Public Speaking (PS)	16	2	4	3,19	,544
	Linguistic Competence (LC)	16	2	5	3,13	,806
	Overall Score	**16**	**40**	**86**	**62.12**	**13.86542**

Active listening showed the highest improvement, with the mean score increasing from M= 2.19 (SD= 1.1) to M= 3.31 (SD= .9). Public Speaking also showed significant improvement, revealing an increase from M=2.44 (SD= 1.1) to M=3.19(SD= .8). There was an improvement in Linguistic Competence, with an increase from M=2.44 (SD=1.2) to M= 3.13 (SD=.8), despite the competence weighing 10% of the evaluation and not being the main focus of the training, and finally, Working Memory had the slightest improvement, with an increase from M=2.25 (SD= .9) to M= 2.81 (SD= 1.04). The increased standard deviation for WM suggests that training might have impacted participants differently, where some may have improved significantly, while others showed little to no improvement (or even declined).

To illustrate, let us look at examples for students' performance change:

S06 had the highest improvement rate, scoring 20% in the pre-test and 60% in the post-test, revealing an impressive improvement rate by 40%. **S03, S04, S13** and **S14** had relatively good improvement, ranging between 20% and 30%. Two participants, **S05** and **S11** showed a decrease in performance, with -22% and -6% respectively. While **S11**'s performance deteriorated a little, the result which grabs our attention is **S05**'s significant deterioration in performance. This particularly stands out due to the fact that not only did **S05** score the *highest* in the pre-test, she also showed consistently good performance throughout training, which raises the question of what might have possibly caused this deterioration. Could it be attributed to external or perhaps personal factors such as motivation levels or fatigue on the day of the post-test?

Table 7: *Frequency Distribution of Pre-test and Post-test scores*

Score	Pre-Test Frequency	Pre-Test %	Post-Test Frequency	Post-Test %	Change
1 (Poor)	8	50	3	18	-32%
2 (Needs Improvement)	4	25	3	18	-7%
3 (Satisfactory)	3	18	6	37	+19%
4 (Good)	1	6	2	12	+12%
5 (Excellent)	None	None	2	12	+12%

Table 7shows that the percentage of students in the "Poor" (1) category decreased *significantly*, marking the highest change across all categories with -32%, which indicates that a substantial number of students who initially performed poorly improved and moved up to higher categories. This is followed by an increase in categories (3) "Satisfactory" by +19%, (4) "Good" and (5) "Excellent" equally with +12% increase, indicating positive skill development, and finally (2) "Needs Improvement" with only -7% decrease, indicating that fewer students remained at a low performance level after training. The results suggest that the intervention has effectively helped students enhance their cognitive skills.

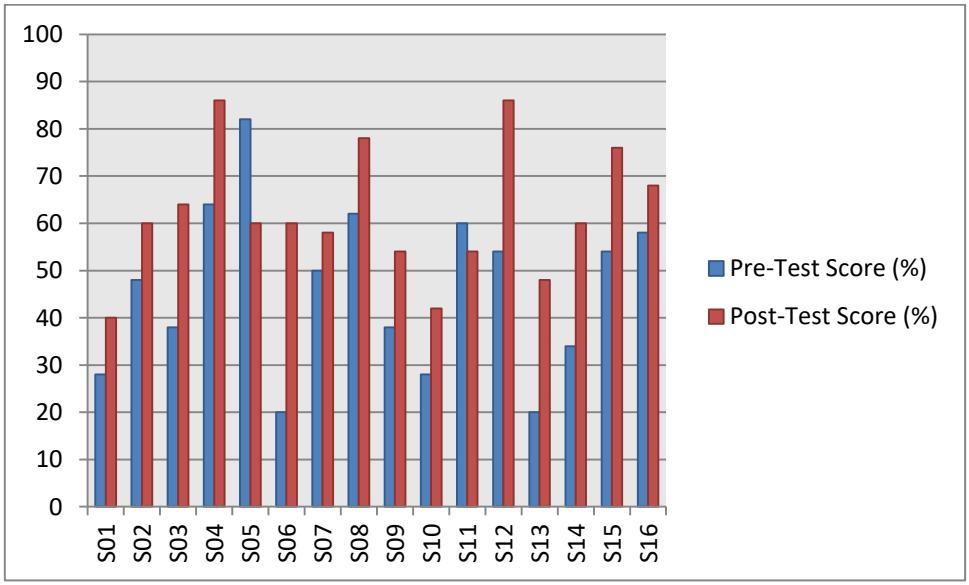


Figure 10: *Students' Pre-test and Post-test results*

Figure 10 illustrates students' Pre-test and Post-test results, highlighting the overall enhancement in their cognitive interpreting skills.

Inferential Statistics

Normality check

In order to conduct the Paired t-Test, we first needed to see if data was normally distributed. This was done using the Shapiro-Wilk test, which revealed that both p-values were greater than 5% (.65 and .41). This means that data is normally distributed, and a Paired t-Test is possible.

Table 8: *Normality check results*

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	,119	16	,200*	,960	16	,659
Posttest	,186	16	,142	,945	16	,410
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

Paired t-Test:

The Paired t-Test results shown in **Table8** indicate that there is a statistically significant difference between Pre-test and Post-test scores (p= 0.001). The estimated variability of the sample mean difference if the study were repeated multiple times is 3.69445.

On average, Post-test scores were (-)15.875 units higher (a 15% increase) than Pre-tests, with a 95% confidence interval ranging from -8.00047 to -23.74953. This means we are 95% confident that the true mean difference between Pre-test and Post-test scores lies between this interval. The negative sign for the mean difference and confidence interval indicates that Post-test scores improved compared to Pre-test scores.

Table 9: *Paired t-Test results*

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Posttest	-15,87500	14,77780	3,69445	-23,74953	-8,00047	-4,297	15	,001

Integration of Statistical and Inferential Results

The frequency distribution analysis revealed a notable shift in performance categories between the pre-test and post-test. In particular, no students scored in Category 5 (Excellent) in the pre-test, while some participants reached this level in the post-test. This indicates that while no students initially demonstrated the highest level of performance, the training program enabled some of them to improve significantly. However, the absence of Category 5 scores in the pre-test may have impacted the statistical comparison between pre-test and post-test distributions. Since no baseline data existed for the highest performance category, it was not possible to measure effect size, and therefore, the magnitude of improvement, within this group. Instead, the observed improvement should be understood as a positive shift in overall performance rather than a direct comparison across all categories. In the paired t-test analysis, the increase in post-test scores was statistically significant, confirming that the observed improvements were unlikely due to chance. However, the missing Category 5 data in the pre-test may slightly affect effect size interpretations, as it suggests that no students were initially at an advanced level before training.

Overall, the frequency distribution analysis, combined with statistical tests, indicate a clear improvement of cognitive skills performance among students. While the absence of Category 5 in the pre-test limits direct category-to-category comparison, **t**he significant reduction in low-category scores 1 (Poor)

and 2 (Needs Improvement) and the emergence of Category 5 (Excellent) reinforce the effectiveness of the intervention. This is further reinforced by the analysis of the audio recordings, carried out using the indicators defined for each skill in the assessment rubric. For instance, the enhanced use of inferencing and reformulation strategies in the post-test, as opposed to the pre-test, indicates an improvement in active listening skills. Similarly, the student's ability to render the speech in clear distinct chunks in the post-test but not in the pre-test implies an impactful improvement in working memory skills. To provide a clearer illustration, let us examine the pre-test and post-test renditions of two participants (the original transcripts are in Arabic, but were specifically translated to English here for illustrative purposes):

Example 1:

Table 10: *Student 06 pre-test and post-test transcripts*

S06	
Pre-test transcript	**Post-test transcript**
"(1) I understood what she said [*Long silent pause]*… So in a way *[Expressed in French*] she talked about [*Filled pause*]there was shock [*Filled pause*] and as a result of*[Filled pause*] the strike that Israel [colloquial word in Arabic] on the [*Filled pause*] the hospital and ...she also talked about Hamas, I forgot what she said I can't translate [*expressed in colloquial Arabic]*. (2) I can't translate but I'll still tell you what she said*[expressed in colloquial Arabic and French]*[*Filled pause*] there were five hundred dead*[Filled pause]*...and about a thousand a thousand *[Filled pause]* injured they weren't all patients but there was also refugees from the war. (3)Around six*[Filled pause*] six people killed*[Silent pause]*...Un-ian school? I didn't understand".	"(1) He, and here Wael Dahdouh says goodbye to a son another son, Wael Dahdouh [*Filled pause*] who died from [*Filled pause*] an Israeli airstrike. (2) [*Filled pause*] according to the the news both were [*Filled pause*] journalists. (3) [*Filled pause*] Dahdouh [*Filled pause]* worked in the in Al Jazeera where his father was the director [*Filled pause*] and he was killed [*Filled pause*] and it was bombed [*Filled pause*] and his entire family died when they were bombed by Israel".

Here are the transcripts of Student 06, who demonstrated the highest and most notable improvement, achieving a 40% increase in score. Even at first glance,

the stark contrast between the pre-test and post-test renditions is immediately apparent. The pre-test rendition is characterized by frequent pauses (14 in total), both filled and silent, along with numerous interjections and expressions that were unrelated to the actual interpretation. The participant provided very little information, spending almost the entire time expressing her thoughts—primarily in colloquial Arabic—about not having understood or being unable to recall any details. The limited words she provided suggest that she did not employ any active listening strategies, becoming fixated on specific terms that she kept in working memory without grasping their meaning or context. Additionally, the unstructured, fragmented, and non-fluent expressions, delivered in a low and sometimes unclear voice, highlight her struggle with public speaking.

On the other hand, the post-test transcript demonstrates significant improvement across all skills. For example, the number of pauses has been reduced by half (7 in total), and these pauses are now used strategically to engage working memory for retrieval then reformulate ideas using appropriate active listening strategies. While the rendition includes occasional repetitions that disrupt the flow and some omissions, it remains clear and easy to follow. The speech is delivered in distinguishable chunks, with fluency and confidence, showcasing effective use of both working memory and public speaking skills. Furthermore, the student avoided any use of colloquial words or expressions in other languages, which indicates an improvement in linguistic proficiency as well.

Example 2:

Table 11: *Student 14 pre-test and post-test transcripts*

S14	
Pre-test transcript	**Post-test transcript**
"(1) [*Filled pause*] Israel had [*Filled pause*] hit [*Long pause*] airstrike? [*Expressed in English*] on the seventh of October Israel had [*Long filled pause*] [*unintelligible muttering*], I don't know the word [*Expressed in English*] *[Filled pause]* more than a hundred two hund*[Self-interruption]* a thousand were injured *[Filled pause]*and this was a reaction for Hamas's *[Filled pause] wh [Self-interruption]*where there were thirteen thousand injured? (2) *[Filled pause]*the strike was in*[Filled pause]*in a hospital in central Gaza, where more than five hundred thousand*[Filled pause]*were injured (3) and there were six *[Filled pause]*six, that six people died in died in a hospital a hospital*[Filled pause]*an American school?	"(1) [*Filled pause*]the journalist of Al Jazeera [*Filled pause*]says in the district of Gaza [*Filled pause*] the [*Filled pause*] journalist Wael Dahdouh has said goodbye to his family [*Filled pause*] and his son Hamza Dahdouh in [*Filled pause*] in atta*[Self-interruption]*in Israeli attacks by a drone with his friend the journalist (2) [*Filled pause*] in [*Filled pause*] the union [*Filled pause*] the union of journalists [*Filled pause*] both worked as [*Filled pause*]f-freelance journalists with Hamza Hamza Dahdouh too (3) [*Filled pause*] Wael Dahdouh is the chief [*Filled pause*] of Al Jazeera bureau in Gaza and he [*Filled pause*] he was seen by many viewers*[Self-interruption]*he caught their attention when he learned of his family's deathin a live across social media where his wife[*Filled pause*] and grandson and son and daughter died".

In this example of Student 14's pre-test and post-test transcripts, we observe several similarities to the previous case. In the pre-test, there are a total of 12 pauses, 2 expressions in English, one unintelligible phrase, and two self-interruptions. The frequent pauses disrupt the flow of delivery, making the interpretation hard to follow and highlighting challenges with public speaking. The self-interruptions, used as a self-regulation strategy (related to working memory), were intended to correct speech but instead led to further errors. This was primarily due to insufficient active listening and working memory, resulting in significant information loss and inadequate speech chunking. Overall, the pre-test revealed clear difficulties with the three main cognitive skills, as well as linguistic competence, evidenced by vocabulary and syntax errors.

On the other hand, multiple aspects were improved in the post-test. The post-test contained the same number of pauses (12), which still affected the pace of delivery. Two self-interruptions occurred, with the second one being successfully used to self-regulate and reformulate a more accurate response. Compared to the pre-test, the student demonstrated better inferencing and reformulation strategies, reflecting improved active listening skills. However, working memory did not show significant improvement, as it failed to support effective chunking or information retention, leading to considerable information loss. On a positive note, vocabulary and syntax showed noticeable improvement, indicating enhanced linguistic competence.

These examples were selected to illustrate how the training contributed to the students' improvement, as reflected in the quantitative results. Below is a detailed description of the qualitative findings for further analysis.

5.2.1.2 Qualitative Results

Post-experiment Questionnaire

In addition to the rubric assessment, a post-experiment questionnaire was administered to complement the statistical data and gather more qualitative information. The questionnaire was administered a month after the experiment. It contained 13 main questions, with 2 sub-questions, and was divided into three main sections according to the topic: Cognitive skills training, Reflective practice, and General Impressions.

It is also worth noting that out of the 16 participants in the experiment, only 10 completed the questionnaire. Although the sample size is limited, we believe the responses still offer meaningful qualitative data.

Section 1: Cognitive Skills Training

In this section, we aimed to collect insights into students' overall impressions and perspectives regarding the exercises and the approach they experienced during the experiment.

1. Novelty of the training exercises

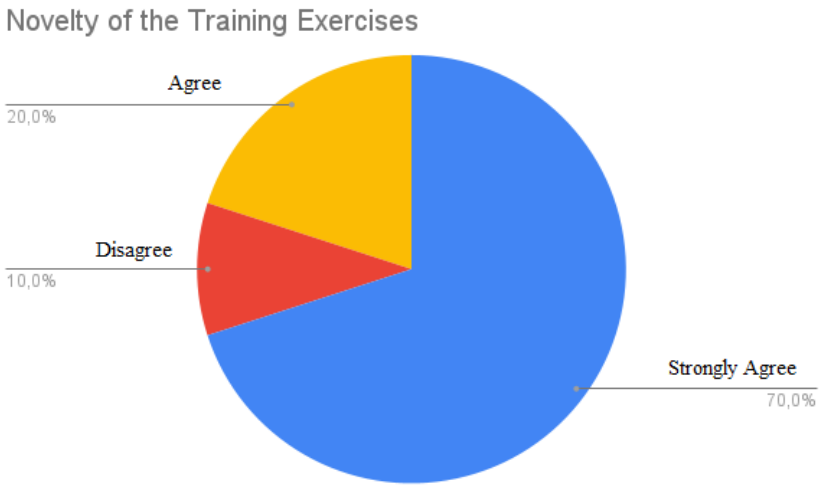


Figure 11: *Responses for the novelty of training exercises*

When asked if the exercises introduced in the experiment were new to them, the vast majority of students confirmed this, with 70% responding "Strongly Agree" and 20% selecting "Agree," while only 10% chose "Disagree." This finding helps clarify the reason behind the marked increase in classroom engagement, which, as the statistical research indicates, contributed to improved outcomes.

2. Practicality of the Exercises

We inquired whether the exercises introduced to participants were practical and easy to replicate at home. All responses were favorable, with 70% selecting "Agree" and 30% choosing "Strongly Agree".

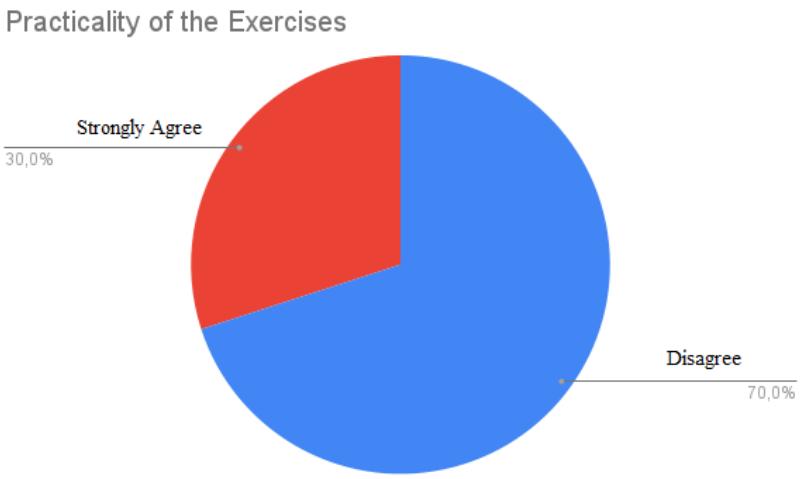


Figure 12: *Responses for the practicality of exercises*

This is significant because the training approach is designed to foster reflective practice and self-directed learning. As such, it is crucial for the instructor to offer trainees exercises that they can later practice on their own and adapt to suit their individual needs.

3. Effectiveness of the Exercises

As part of reflective training, it is important that students reflect on their performance in order to track their progress. We asked students whether they believe the exercises introduced in the classroom helped them develop their cognitive and mental skills.

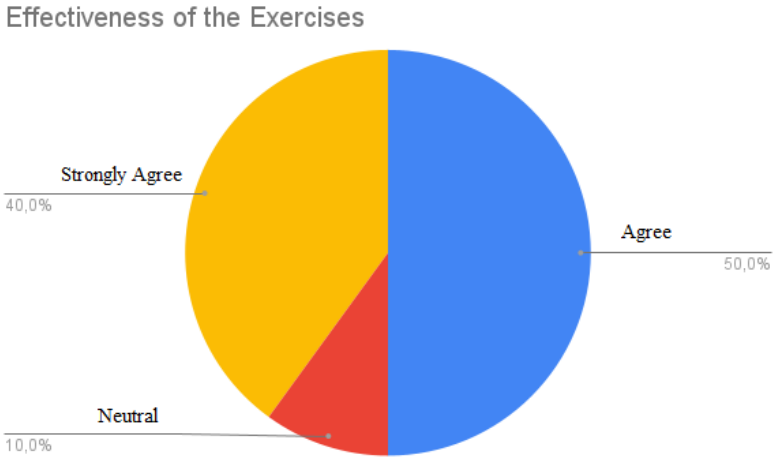


Figure 13: *Responses for the effectiveness of exercises*

The vast majority responded positively, with 40% selecting "Strongly Agree," 50% choosing "Agree," and 10% indicating "Neutral." It is possible that the students in the "Neutral" category may not have fully developed the ability to reflect on their progress. Nevertheless, the responses align closely with the test result data, as evidenced by the observed improvements in active listening and working memory scores.

4. Impact on Overall Interpreting Performance

The primary goal of applying the cognitive approach to interpreter training is to enhance overall interpreting performance.

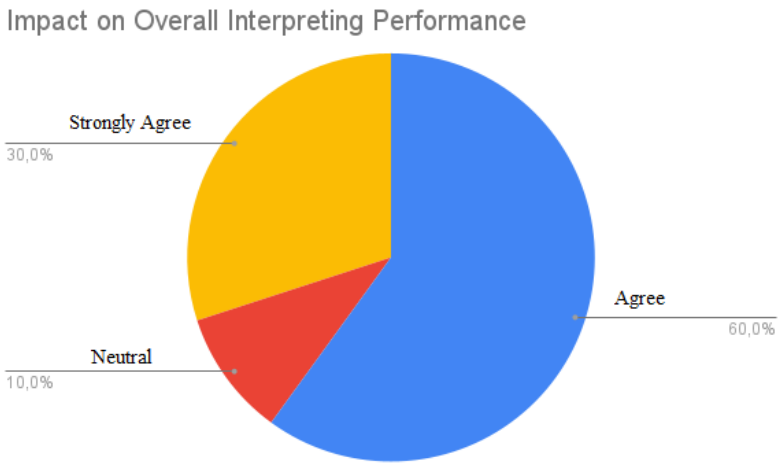


Figure 14: *Responses for the impact on overall interpreting performance*

30% of students indicated that they "Strongly Agree" with the statement that their overall interpreting performance improved due to the cognitive exercises training, while 60% selected "Agree," representing the majority. The remaining 10% expressed remained neutral. While the post-test results revealed overall improvement in students' performances,, particularly in consecutive interpreting, it still needs to be confirmed through more extensive and rigorous research whether cognitive training and overall interpreting performance are correlated.

5. Perspectives on the Importance of Cognitive Training

We asked students to indicate whether they believed that training specific cognitive skills, such as active listening, working memory, and public speaking, was important. 90% responded with "Strongly Agree," while the remaining 10% selected "Agree."

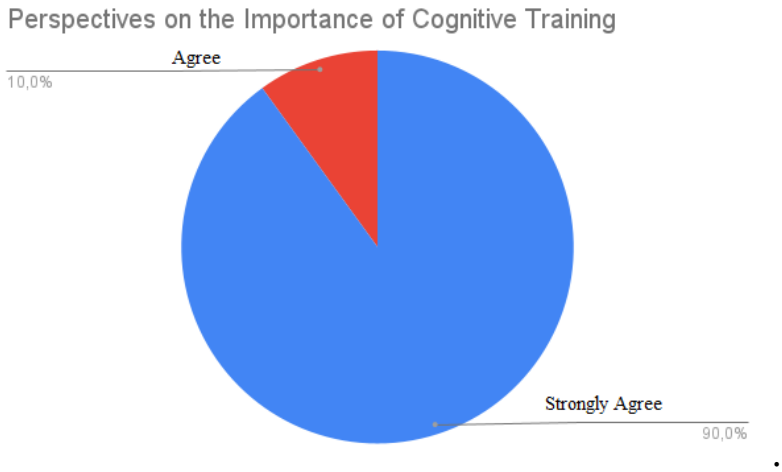


Figure 15: *Responses for perspectives on the importance of cognitive training*

6. Perspectives on Integrating Additional Cognitive Training

In the last question of this section, we asked students if they would personally like to have more cognitive training added to their interpreting program, and the vast majority (70%) responded with 'Strongly Agree', and the other 30% with 'Agree'.

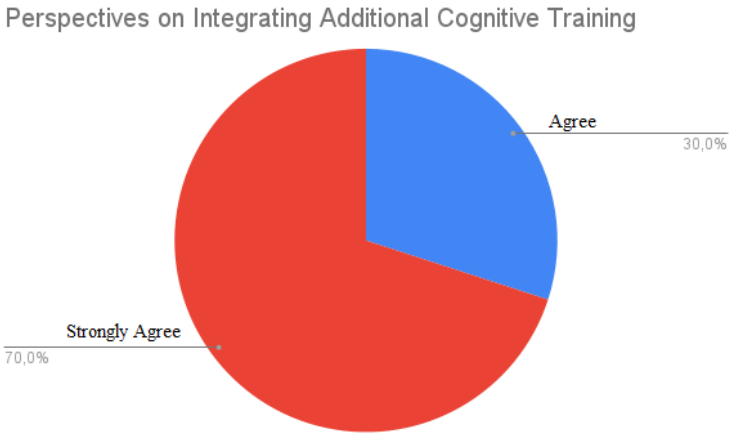


Figure 16: *Responses for perspectives on the integration of additional cognitive training*

The responses to this question as well as the previous one are a clear indication of students' positive reception of the training approach, as well as readiness to work more on enhancing their cognitive skills for interpreting.

Section 2: Reflective Practice

In this section, we aimed to assess students' attitudes toward the notions of reflective practice, a concept they had only recently been introduced to.

7. Reflective Practice Knowledge

First, we aimed to determine whether students had a clear understanding of this concept and its principles. We asked them to define reflective practice to the best of their ability, and the responses showed that most students had a relatively good idea about the construct. Responses were submitted in Arabic and French, so we translated them for inclusion in this analysis. Here are some of the short definitions provided by students:

"Reflective practice is a whole set of steps, ranging from being aware of what is happening around us, analyzing it, and finally taking action".

While the steps involved in this definition do pertain to RP, the student missed the point about reflecting *inwards*, i.e. analyzing not just what is around, but more importantly what goes on within the person's own mind.

Another student defined it as "*stepping back and reflecting on our own actions, and in interpreting it means thinking about our own practice of interpreting".* This definition encapsulates the notion of reflection in training well. Other definitions included basic and general definitions such as *"auto-criticism*", *"deep analysis of actions",* and "*gaining control over skills".*

A final response which we believe sums it up perfectly, especially in relation to personal evaluation, defines RP as *"the application of theory, evaluating and*

observing the results obtained after implementation, with the aim of improving their quality".

Based on these responses, we recommend integrating a structured explanation of reflective practice principles throughout the training program. This would help students become more familiar with both the theoretical and practical foundations of the approach.

8. Perspectives on the Importance of Reflective Practice

Participants were asked whether, as interpreting trainees, they considered reflective practice to be important for their training. All (100%) replied with yes.

- Justification:

We asked those who replied with 'Yes' to justify their answer, and these were some of the responses:

- "*Because it allows us to auto-correct".*
- *"Because it enforces personal development and enhances interpreting performance".*
- *"Because the act of interpreting develops in the student through structured practice".*
- *"Based on my understanding of reflective practice, yes, I consider it to be very important, because by analyzing the results that I got, and I mean by that 'translation [product]', I can recognize the mistakes and the obstacles that I face especially repeated ones, and try to avoid it I practice interpreting the next time".*

The justifications clearly indicate that students are well aware of the impact that this approach has had on their training, and that it enhances skills and improves their learning process.

9. Continuous Practice

Since the questionnaire was conducted a month after the intervention, we aimed to determine whether students had developed reflective habits and continued their learning independently.

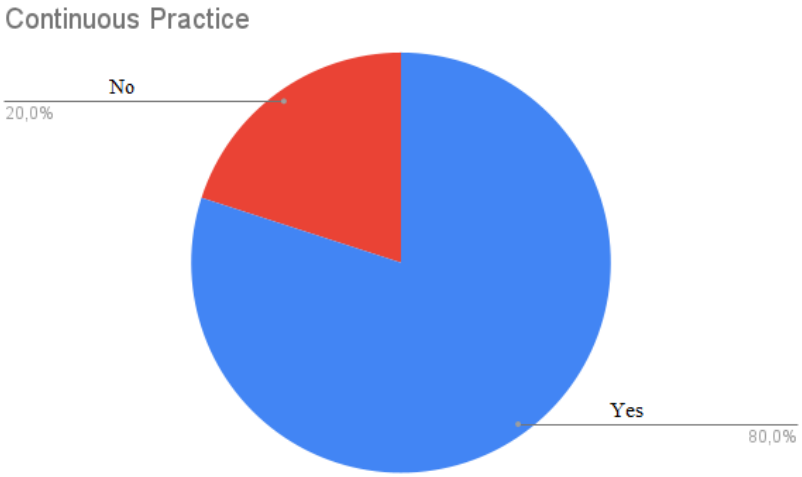


Figure 17: *Responses for continuous practice*

20% answered with 'No', while the overall majority (80%) responded with 'Yes'. For those who answered in the affirmative, we asked them to indicate which practicing habits they continued to implement.

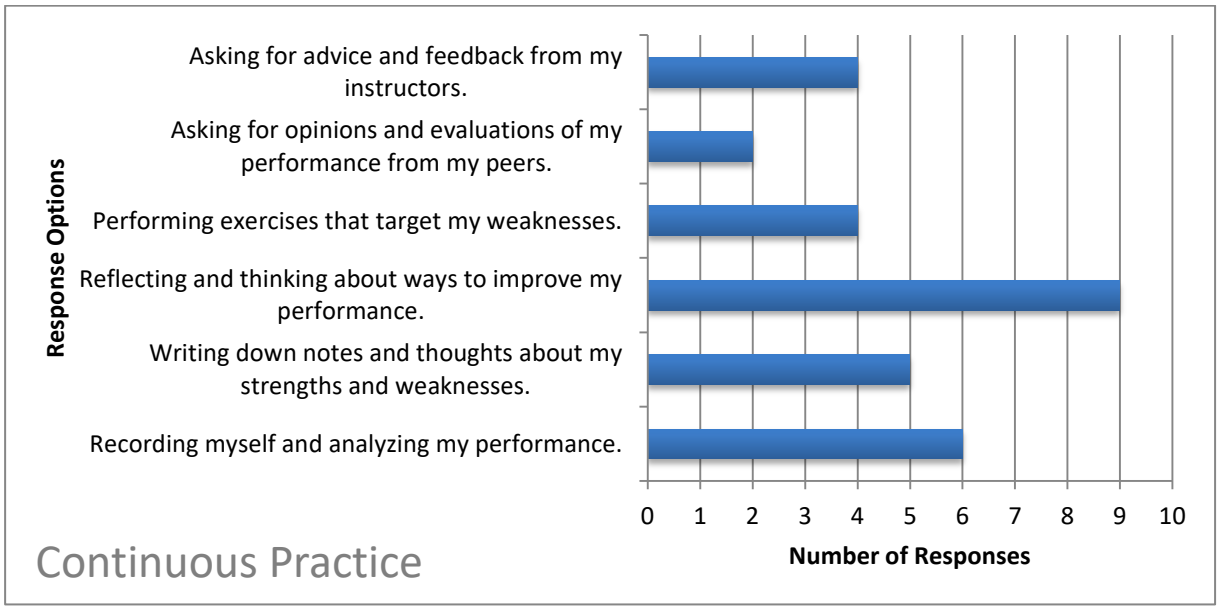


Figure 18: *Responses for continuous practice habits*

As shown in **Figure 18**, the habit which 90% of respondents said that still applied is *Reflecting and thinking about ways to improve my performance*, followed by 60% for *Recording myself and analyzing my performance*, 50% for *Writing down notes and thoughts about my strengths and weaknesses*, 40% for both *Performing exercises that target my weaknesses* and **Asking advice and feedback from my instructors**. Finally, only 20% of students responded with *Asking for opinions and evaluations of my performance from my peers.*

Interestingly, responses revealed that most students still perform some kind of reflective practice, despite no longer taking part in the experiment. However, what is particularly notable is that the option with the highest number of responses is the act of primary reflection, in contrast to the other options, which focus on the practical application of reflective strategies. According to the principles of RP, while reflection is undeniably important, it alone is insufficient for meaningful progress. For learners to achieve tangible improvement, reflection must be accompanied by deliberate and structured actions. Additionally, the option with the fewest responses relates to seeking feedback from peers, a strategy that is both crucial and highly valuable for reflective practice. However, respondents do not appear to view it as an essential component of their learning process. This calls for greater emphasis on the importance of peer feedback in the training or learning process.

10. Practice Frequency

Building on the previous questions, we also inquired about how frequently students engage in RP.

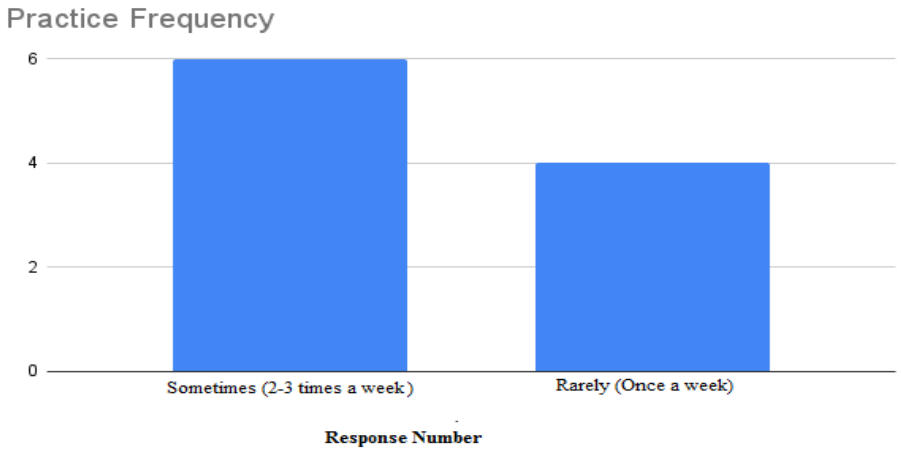


Figure 19: *Responses for practice frequency*

As shown in **Figure19**, 60% answered with Sometimes (2-3 times a week), and the remaining 40% with Rarely (Once a week). This is significantly low compared to the recommendation that RP should be a daily or regular habit. Combined with the previous question results, it becomes clear that while students recognize the importance of reflective practice, , it is evident that while students acknowledge the value of reflective practice, they do not dedicate sufficient time or effort to integrating it into their daily routines.This is a crucial point that instructors must consider when incorporating reflective practice into training. They should develop strategies and methods to encourage learners to adopt it, ensuring they recognize and embrace its personal benefits.

Section 3: General Impressions

Finally, we included this section to gather general feedback and impressions about the overall training approach.

11. Positive Impressions

We invited students to share any positive feedback about the training course, and their responses highlighted three key themes organized according to responses from the most frequently mentioned to the least:

- Teaching Methodology: A predominantly practical and dynamic approach to training.
- Teacher's Approach: Offers valuable feedback, consistent encouragement, and motivation.
- Course Content: Highly informative, covers the most recent events, utilizes materials like video projectors, and incorporates authentic speeches directly relevant to interpreting.

12. Negative Impressions

Similarly, we asked students to share any negative feedback about the training course. The responses highlighted concerns such as insufficient training hours, the occasional use of difficult and fast-paced speeches, and a lack of diversity in speech topics.

13. Additional Remarks

Only two participants offered additional thoughts, which we found particularly interesting and insightful. Both respondents expressed a desire to see this approach and its associated exercises integrated across all levels of the program, especially for students in their early years. They emphasized that this would help learners acquire essential interpreting skills sooner in their training journey. This aligns with our belief that cognitive training should be introduced early in the interpreting curriculum to maximize its effectiveness.

5.3 Discussion

5.3.1 Interpretation of Quantitative Findings

Through various statistical analyses, the results demonstrated significant improvement in post-test scores, reflecting the enhancement of the cognitive skills targeted during the intervention phase. Key statistical measures, including the mean, standard deviation, and frequency distribution, underscore this progress. For example, the mean post-test score (M = 62.12) was significantly higher than the pre-test mean (M = 46.25), indicating overall improvement across participants. The standard deviation also revealed reduced variability in post-test scores (pre-test SD = 17.49, post-test SD = 13.86), suggesting more consistent performance levels among students. Furthermore, the frequency distribution showed a clear shift toward higher scores in the post-test compared to the pre-test. Specifically, 39% of participants who initially scored in categories 1 (Poor) and 2 (Needs Improvement) moved to higher categories, while category 5 (Excellent) saw a 12% increase. The paired t-test results further confirmed these findings, revealing a statistically significant difference between pre-test and post-test scores ($p < 0.05$) (pre-test = 0.659, post-test = 0.410). However, it was not possible to calculate an effect size for the individual skills due to the absence of category 5 (Excellent) in the pre-test data.This highlights the effectiveness of the intervention in strengthening cognitive skills, with active listening and public speaking showing the highest score increases, while working memory, though improving to a lesser extent, still contributed to enhanced interpreting performance.For example, the significant increase in active listening scores after training suggests that targeted exercises such as idiomatic gist and summarization tasks enhanced comprehension and reformulation. Similarly, improved Public Speaking scores indicate that presentation activities enhanced students' fluency, and delivery. This is further illustrated in the comparison between students' recording transcripts with the help of cognitive skills indicators used in the assessment rubric.

These findings align with existing literature on the connection between interpreter training and cognitive skill development. As highlighted by Bowen & Bowen (1984) in the context of consecutive interpreting and Ilg & Lambert (1996) in relation to simultaneous interpreting, the integration of preparatory skill development exercises at the earliest stages of training is crucial for building a strong foundation. Both studies emphasize the importance of early exposure to exercises that target cognitive skills, which supports the observed improvements in this study.

5.3.2 Interpretation of qualitative findings

The qualitative results from the post-experiment questionnaire provided valuable insights into multiple areas. With regard to cognitive skills training, students expressed a positive attitude toward the teaching approach and the implementation of the exercises, particularly those which targeted the development of key cognitive skills such as active listening, working memory, and public speaking. Throughout the experiment, the students perceived noticeable development in both their cognitive skills and overall interpreting performance, which impacted their reception of training and prompted their positive engagement. As for Reflective Practice, while students demonstrated a relatively well-formed understanding of RP principles and acknowledged its importance for training and self-development, their engagement with RP declined after the experiment. This highlights the need for further analysis and strategies to encourage sustained practice in the future. The results indicated that the current practices used for RP are insufficient. While students rely on introspection strategies, they often fail to take concrete actions to address the challenges they identify. According to Shreve (2009), this lack of practical implementation hinders the achievement of the desired outcomes associated with RP, which requires the intervention of the trainer to promote self-reflective practices through encouragement and guidance. Finally, students provided final impressions, which revealed that they responded enthusiastically to the training

methodology, appreciating its innovative, practical, and learner-centered approach. They suggested areas for improvement, such as incorporating more diverse teaching materials and extending the methodology to other training levels to maximize its impact.

5.4 Limitations & Implications

The study is not without its limitations, many of which stem from the research design itself.First, the small sample size limits the study's ability to detect significant effects or differences. The limited number of participants, combined with the specific requirements for inclusion in the experiment, made it impossible to establish a control group or randomly assign participants to groups. As a result, we opted for a quasi-experimental design, which makes it more challenging to attribute the observed effects solely to the intervention.Another limiting factor is the instruments used for testing and data collection, particularly the rubric designed to assess participant performances. Due to time constraints and limited resources, it was not feasible to rigorously test the validity of these instruments. Additionally, the interpretation of the data was constrained by the nature of the topic itself, which involves variables that are inherently challenging to assess and measure—specifically, cognitive skills and interpreting performance. A further complication lies in the difficulty of isolating which specific element of the intervention influenced particular mental skills, making it hard to draw precise conclusions about cause and effect.

On a different and more positive note, the findings of the study held many implications, specifically for interpreter training and curriculum design. By highlighting the enhanced performances caused by the implementation of cognitive training, the results support the extensive literature discussed throughout this work that calls for the incorporation of pre-interpreting training that targets the development of cognitive skills specific to the practice,

especially in the early stages of training.The study also highlighted the importance of complementing the training with reflective practice to support students throughout their learning journey, reinforce the skills taught, and cultivate independent, self-directed learners. This approach ensures that the benefits of the training extend far beyond the classroom, equipping learners with tools for continuous growth and development.

Finally, although previously mentioned as a limitation, the rubric specifically designed for this experiment to assess interpreting performance and detect cognitive skill development through specific behavior indicators represents a novel contribution. Its originality calls for future research to replicate the study and evaluate its validity and suitability for use in similar experiments. We believe this area remains highly underexplored and warrants further investigation to develop standardized and generalized testing and evaluation tools for cognitive skills in interpreting.

5.5 Conclusion

At the beginning of our study, two main research questions were elaborated, the second of which being:

2. What impact does a cognitive approach have on trainees' interpreting performance?

The quasi-experimental study described in the previous chapter and further elaborated in this one was designed to address the second research question. The findings, supported by both quantitative and qualitative data, support our initial hypothesis that systematic and targeted cognitive training enhances trainee's interpreting performance. The post-test results, demonstrating significant improvements across all assessed skills, reinforce the premise that cognitive skills exercises play a pivotal role in interpreter training. The statistical analysis showed significant improvements in trainees' performance between the pre-test and post-test, particularly in active listening skills such as inferencing and reformulation, which demonstrated measurable progress. Working memory also improved, as evidenced by better chunking and information retention, indicating enhanced information-processing abilities. Furthermore, public speaking skills, including fluency, diction, and delivery, showed noticeable refinement, supported by higher scores and qualitative feedback from audio recordings.

Beyond measurable improvements, trainees reported increased confidence and a more strategic approach to interpreting. The qualitative data enhanced their awareness of the nature of the cognitive load encountered while interpreting and the effectiveness of targeted exercises in addressing this issue. These insights align with existing research in cognitive interpreting studies, reinforcing the role of cognitive training in interpreter education.

Although not originally planned as a central focus of the study, Reflective Practice emerged as a crucial element during the research process. Learning journals and post-exercise discussions enabled trainees to become more aware of

their learning progress and cognitive development. Qualitative analysis highlighted how reflection and introspection deepened learners' self-awareness of their strengths and limitations, prompting them towards actionable steps towards improvement. This finding underscores the importance of integrating reflective practice into interpreter training, provided it is supported by instructor guidance and learner motivation. When combined with cognitive training, reflective practice fosters metacognitive awareness and facilitates long-term skill development. The study therefore contributes to ongoing discussions on process-oriented interpreter training and highlights the need for an interpreting curriculum design that integrates preliminary cognitive skills training. While the results are encouraging, the study also recognized limitations. One of the main constraints to our research design relates to students' linguistic proficiency and language combinations. Although participants had previously completed language enhancement courses in their early years of study, several still exhibited difficulties with language proficiency. While this factor had some impact on overall scores, its influence remained limited, as linguistic competence was assigned only a 10% weight of the total score.

Furthermore, the diversity in language combinations among participants posed challenges in terms of reliability. Students with more commons language pairs, such as French and English, generally demonstrated stronger linguistic proficiency compared to those working in Spanish. However, the results revealed an interesting aspect, which is that some students in the Spanish group (S02 and S10) outperformed others in the English and French groups (e.g., S01 and S13) despite interpreting relatively faster and denser speeches. This suggests that performance improvement is not necessarily determined by language proficiency, but that other cognitive factors play a more significant role, which explains weighting the remaining skills at 30%.

This leads us to another inherent issue, that of the uncontrollable nature of interpreting testing methods. As Gile (1998, p.78) explains, a major challenge in experimental research on interpreting is the impossibility of creating a fully controlled environment that ensures absolute reliability and validity. This is particularly relevant to the pre-test and post-test speeches, which in an ideal scenario, should be identical in terms of assessment criteria. While attention was duly paid to the selection of speeches similar in nature and topic, it was impossible to match them exactly in terms of speech rate, terminology and speaker delivery style. As shown in the experiment description, speech rates varied, and this discrepancy raises the possibility that an increase in post-test speech difficulty may have contributed to lower improvement levels among some participants. To mitigate such limitations, Gile suggests prioritizing observational research that examines interpreters in natural- rather than controlled- settings. Yet, this should not discredit experimental research, but calls for more efforts to be put toward enhancing validity testing tools in interpreting studies instead.

Overall, the results confirm that systematic cognitive training enhances interpreters' skills and performance. Furthermore, the unexpected but valuable role of reflective practice suggests that interpreter training should not only focus on skill-building exercises but also but also promote active self-assessment and strategic adaptation among trainees. These insights set the foundation for the General Conclusion, where broader implications of the study will be discussed, alongside recommendations for interpreter training curricula and future research directions.

General Conclusion

This thesis has explored the role of cognitive training in interpreter education, particularly its incorporation into Algerian interpreting programs and its impact on trainees' interpreting performance. Grounded in cognitive theories and process-oriented interpreter training, the study sought to address two key research questions: the extent to which cognitive training is integrated into existing programs and the effectiveness of a systematic cognitive training approach in enhancing interpreting skills.

The theoretical framework established in the first two chapters positioned interpreting as a cognitively demanding process requiring advanced mental operations, including attention allocation, memory, and real-time information processing. Process-oriented approaches to interpreter training emphasize the importance of developing these cognitive skills systematically, yet little research has examined their explicit inclusion in Algerian interpreting programs. To investigate this gap, observational research was conducted to examine the current state of cognitive training in Algerian interpreting education. Contrary to the initial hypothesis, the findings revealed that a certain level of cognitive training is indeed present, particularly in the early stages of training. However, this training is unsystematic and largely dependent on individual instructors' personal efforts to stay informed about evolving training methodologies. While this suggests a lack of formalized cognitive training within curricula, it also highlights a promising foundation upon which a more structured and standardized approach could be developed.

The experimental phase of the study assessed the impact of a structured cognitive training methodology on trainees' interpreting performance. The quasi-experimental design demonstrated that participants who underwent targeted cognitive skill exercises showed significant improvements in active

listening, working memory and public speaking skills. These findings confirmed the second hypothesis, supporting the argument that systematic cognitive training enhances interpreter performance.

Specially Designed Research Tools

To ensure a comprehensive and structured analysis of cognitive training in interpreter education, this study developed two specialized research tools:

1. A Classroom Observation Rubric

This rubric was designed to systematically evaluate teaching practices aimed at enhancing cognitive skills in interpreting classrooms. It includes categories for source and target language, memory, listening comprehension, public speaking, interpretive theory and audio-visual aids, allowing observers to mark which practices are actively incorporated by instructors. This tool provided valuable insights into the extent of cognitive training within Algerian interpreting programs.

2. An Assessment Rubric for the Quasi-Experiment

To evaluate the impact of cognitive training on trainees' interpreting performance, an assessment rubric was specifically developed. This tool relied on identified indicators for each cognitive skill- active listening, working memory, public speaking- as well as linguistic competence, to objectively assess trainees' pre-test and post-test performances. By using this structured evaluation method, the study was able to quantify the effectiveness of cognitive training interventions and draw evidence-based conclusions.

While these tools provided valuable data, their reliability and validity still require further testing and refinement. Future research should focus on conducting validity and reliability checks to ensure their consistency and effectiveness in evaluating interpreter training practices. Establishing standardized and widely accepted tools could contribute significantly to the field of interpreting studies.

Pedagogical implications

Beyond its immediate findings, this research carries several pedagogical implications for interpreter education in Algeria and beyond.

1. Revisiting the Training Curriculum

Given the demonstrated benefits of cognitive training, interpreter training curricula should be revised to explicitly incorporate cognitive skill development as a structured and integral component. A more process-oriented approach should replace the current fragmented efforts, ensuring that all trainees receive systematic cognitive training throughout their education.

2. Integrating Reflective Practice

The study emphasized the importance of reflective practice in enhancing trainees' cognitive awareness and self-regulation. Encouraging students to engage in reflective learning- through journals, self-assessment, and guided discussions- would strengthen their ability to monitor and improve their interpreting performance over time.

3. Revising Admission and Selection Criteria

One of the significant findings from both the observational research and experimental results was that linguistic competence among trainees was below the expected proficiency level for interpreter training. Instructors noted this issue in interviews, and the quasi-experiment confirmed that language deficiencies negatively impacted trainees' interpreting performance. This suggests that current admission and selection criteria for interpreter training programs in Algeria need to be revised and strengthened to ensure that incoming students possess necessary linguistic proficiency.

4. Developing a Dedicated ‘Cognitive Skills Training’ Module

Drawing from the insights gained through this research, a new training module titled ‘Cognitive Skills Training’ was elaborated (Appendix K). This module is designed to systematically enhance key cognitive functions essential for interpreting, including active listening, working memory, discourse processing and delivery skills. By institutionalizing this training within interpreter education, students would receive structured and targeted cognitive development rather than relying on individual instructors’ initiatives.

Implications for Professional Development

The findings of this study extend beyond student training and have important implications for the continuous professional development (CPD) of practicing interpreters and interpreter trainers:

1. Ongoing Cognitive Training for Professionals

Given that interpreting is a cognitively demanding task, practicing interpreters should engage in ongoing cognitive training to maintain and enhance their mental agility. Continual Professional Development (CPD) programs for interpreters should include memory drills, advanced listening exercises, and real-time processing techniques to help professionals sustain their performance over time.

2. Training the Trainers

Since the study revealed that cognitive training in Algerian programs is often dependent on individual instructors' efforts, it is essential to provide training workshops for interpreter educators. These workshops should introduce structured cognitive training methodologies, ensuring that trainers are equipped with the necessary tools to systematically develop students’ cognitive skills and assess their progress.

3. Incorporating Cognitive Training in Certification and Accreditation

Interpreter certification bodies and professional associations should consider integrating cognitive training components into certification exams and CPD requirements. Assessing cognitive flexibility, working memory, and multitasking skills could become a key aspect of professional accreditation, ensuring that interpreters meet high cognitive performance standards.

Final Remarks

In conclusion, this dissertation has demonstrated that while cognitive training is present in Algerian interpreter education, it remains unstructured and dependent on individual initiatives. By formalizing and expanding these efforts through curriculum reform, structured cognitive training, and improved selection criteria, training programs could better prepare students for the cognitive demands of the profession. Moreover, the specialized research tools developed in this study—the classroom observation rubric and the assessment rubric—offer valuable frameworks for systematically assessing and implementing cognitive training in interpreter education. However, further research is needed to validate and refine these tools to ensure their accuracy and applicability in broader educational settings. Beyond academia, this research highlights the need for continuous professional development in cognitive skills for both practicing interpreters and interpreter trainers. Establishing cognitive training as an integral part of professional practice can enhance interpreters' long-term performance, adaptability, and resilience in high-pressure environments. Future research should explore strategies for institutionalizing cognitive training within curricula, assessing its long-term impact, and refining interpreter selection processes. With continued advancements in training methodologies, cognitive skill development has the potential to become a cornerstone of interpreter

education and professional practice, equipping trainees and professionals alike with the mental agility required for high-quality interpreting.

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Appendices

Appendix A: Consecutive Interpreting Assessment Form

This appendix contains the assessment form used to evaluate Consecutive Interpreting performance.

			Grades	Points
1.	**EQUIVALENCE (functional-pragmatic equivalence)**	Full equivalence Partial equivalence No equivalence	3 2 0	
2.	**GRAMMAR**			
2.1	**GENERAL EVALUATION (form, use, appropriateness)**	No grammar errors Minor grammar errors Major grammar errors	3 2 0	
2.2	**DISCOURSE-SPECIFIC GRAMMATICAL STRUCTURES**	Correct selection and use of grammatical structures Limited range of discourse-specific grammatical structures No discourse-specific grammatical structures	3 2 0	
3.	**VOCABULARY**			
3.1	**GENERAL EVALUATION (use, collocations, variety)**	No lexical errors Minor lexical errors Major lexical errors	3 2 0	
3.2	**SPECIALISED VOCABULARY-TERMINOLOGY (use, collocation, appropriateness)**	Correct selection and use of specialised vocabulary Limited range of specialised vocabulary (non-specialised vocabulary prevails) No specialised vocabulary	3 2 0	
4.	**PHONETICS (intonation, correctness, language variety use, consistency)**	No phonetic errors Minor phonetic errors Major phonetic errors	3 2 0	
5.	**FLUENCY OF OUTPUT DELIVERY (stops, pauses, hesitations etc.)**	Fully fluent Minor fluency errors / short pauses, infrequent hesitations Major fluency errors / frequent and long pauses, frequent hesitations	3 2 0	

6.	**STYLE AND REGISTER**	Correct discourse-specific style and register Minor problems with discourse-specific style and register No adherence to discourse-specific style and register		3 2 0	
7.	**NOTES AND NOTE-TAKING SKILLS**	Fluent use of the trainee's own notes Minor problems in using the trainee's own notes Major problems in using the trainee's own notes		3 2 0	
8.	**AFFECTIVE FACTORS* (whether their negative role(s) is observable**	No negative role of affective factors Minor influence of affective factors Major influence of affective factors		3 2 0	
IMPRESSION AND MARKET SUITABILITY	**Positive market suitability / impression of a professional**	High quality interpreting output. No adjustments necessary.	100-93%	30-28	5
		Good quality interpreting output. Only slight revision necessary.	92-84%	27-25	4.5
	Interpreting training purposes	Acceptable quality interpreting output. Greater revision necessary.	83-76%	24-23	4.0
	Negative market suitability / interpreting training purposes	Meagre quality interpreting output. More detailed revision necessary.	70-75%	22-21	3.5
		Meagre quality interpreting output. Major revision necessary.	69-60%	20-18	3.0
		Unacceptable. Re-translation necessary.	59-0%	17-0	2.0
	FINAL GRADE				
***ADDITIONAL COMMENTS ABOUT THE EFFECTIVE FACTORS IDENTIFIED:**					

Grading policy: Adapted from Daniel Gouadec's (2010, p. 273) grades used to assess translation: "rough-cut" (grade 0), "fit-for-delivery" (with minor improvements needed) (grade 2), "fit-for-broadcast" ("accurate, efficient, ergonomic") (grade 3)

This questionnaire isreproduced from Walczyński (2017, pp. 134-135).

Appendix B: Introductory seminars in the Conference Interpreting MA at the Faculty of Translation and Interpreting - University of Geneva

This appendix contains the detailed description of the Introductory Seminars for the Conference Interpreting program at the University of Geneva

Intitulé : Séminaires d'introduction I Ma

49 heures CS 7 crédits

Objectifs :
Comprendre et décrire les principales tâches liées à l'interprétation consécutive et simultanée en vue d'explorer les compétences sous-jacentes. Apprécier et expliquer le rôle du feedback dans le processus d'acquisition desdites compétences et développer une matrice de feedback structuré. Développer une capacité d'analyse des discours écrits et oraux pour comprendre et, le cas échéant, produire des discours structurés.

Descriptif :
Dans cette série de séminaires interactifs, l'étudiant ou l'étudiante est guidée vers une analyse décompositionnelle des tâches cognitives complexes impliquées dans les différents modes d'interprétation, y compris, mais non exclusivement, l'interprétation consécutive et simultanée. Par le biais d'exercices individuels et collectifs en classe et à la maison, il ou elle entraîne les diverses compétences constitutives des tâches identifiées. L'étudiant ou l'étudiante effectue des analyses de texte et de discours sous diverses contraintes temporelles et cognitives et, au fil du temps, met en œuvre ses connaissances pour produire différents types de discours. Enfin, il ou elle explore le cycle du feedback et, au cours d'exercices pratiques, est invitée à fournir un feedback critique et structuré de ses propres performances et de celles de ses pairs.

Compétences visées :
Capacité à identifier et décrire les différentes tâches constitutives de l'interprétation consécutive et simultanée, et à discerner et expliquer les principales compétences sous-jacentes à chaque modalité d'interprétation en utilisant le métalangage conventionnel approprié. Capacité à analyser rapidement différents types de textes et de discours pour en extraire rapidement les éléments de forme et de fond. Apprécier le rôle essentiel du feedback dans le processus d'acquisition des compétences. Dans le contexte du cycle du feedback, capacité à analyser de manière critique et structurée sa propre performance et celle de ses pairs en vue d'accélérer et d'améliorer le processus d'acquisition des compétences.

Modalités d'évaluation :
Acquis / non acquis. 75% de temps de présence et participation active nécessaire pour obtenir les crédits.
Activités à réaliser pendant le semestre selon indications de l'enseignant ou l'enseignante données par écrit au déb
Rattrapage : activités supplémentaires à effectuer.

Prérequis : o

This was reproduced from: Université de Genève (2023).

Appendix C: Exploratory Questionnaire for Interpreting Students

This appendix contains the original questionnaire used in the study to gather exploratory data.

Questionnaire for Interpreting students استبيان موجه لطلبة الترجمة الشفوية

This questionnaire is part of an ongoing research aimed towards investigating the implementation of cognitive training in the early stages of the interpreter's training. Cognitive training includes working on improving mental skills such as **active listening, memory, visualization, concentration and public speaking**.

Thank you for taking your time while responding to these questions as your answers are of a great relevance to our research.

هذا الاستبيان هو جزء من بحث جار يهدف إلى دراسة إدراج التدريب على المهارات المعرفية في المراحل الأولى من تكوين الترجمان. يشمل التدريب على المهارات المعرفية العمل على تحسين المهارات الذهنية مثل**الاستماع الفعال والذاكرة والتصور والتركيز والخطابة**.

شكرا على أخذكم الوقت الكافي للإجابة على هذه الأسئلة.

1. **Language pair : الزوج اللغوي**

2. **What interpreting modules have you found the most difficult?**
   ما هي أصعب مقاييس الترجمة الشفوية بالنسبة إليك؟

☐ Sight Translation الترجمةالمنظورة

☐ Consecutive Interpreting الترجمةالتتابعية

☐ Simultaneous Interpreting الترجمةالفورية/التزامنية

3. **Would you describe your training in interpreting as mostly theoretical or practical?هل تصف تدريبك في الترجمة على أنه نظري أو عملي في الغالب؟**

☐ Theoretical نظري

☐ Practical عملي

☐ Both كلاهما

- Comment تعليق

4. **Do you have an idea about the cognitive (mental) skills needed for interpreting? (e.g: active listening, memory, visualization, concentration, public speaking.)**

هل لديك فكرة حول المهارات المعرفية (الذهنية) اللازمة للقيام بالترجمة الشفوية؟ (مثل:الاستماع الفعال، الذاكرة، التصور، التركيز، الخطابة).

☐ Yes نعم

☐ Noلا

5. **Have you, at some point during your training, done any exercises that can help improve your mental abilities and skills like the ones mentioned above?**

هل قمتم بإجراء تمارين في مرحلة ما من تكوينكم من شأنها أن تساهم في تحسين قدراتكم الذهنية ومهاراتكم مثل تلك المذكورة أعلاه؟

☐ Yesنعم

☐ No لا

- If yes, for how long approximately? إذا كانت الإجابة بنعم ، فكم كانت المدة تقريبا؟

6. Do **you work on improving your mental skills for interpreting?**

هل تعمل على تحسين مهاراتك الذهنية من أجل الترجمة الشفوية؟

☐ Yesنعم

☐ No لا

- If yes, do you:إذا كانت الإجابة بنعم، هل

☐ Repeat the same exercises given in class تقوم بتكرار نفس تمارين القسم

☐ Search for new exercises and strategiesتبحث عن تمارين واستراتيجيات جديدة

7. **How many hours per week do you practiceinterpreting outside of the classroom?**

كم ساعة في الأسبوع تتدرب على الترجمة الشفوية خارج ساعات الدراسة؟

☐ Less than 1hourأقل من ساعة

☐ 1-2 hours من ساعة إلى ساعتين

☐ 3-5 hoursمن ثلاث إلى خمس ساعات

☐ More than 5 hours أكثر من خمس ساعات

8. **Do you practice**: **هل تتدرب**

☐ Aloneلوحدك

☐ Withclassmates مع زملائك

9. **Would you like to have practical exercises for improving cognitive skills added to your interpreting program?**

هل ترغب في إضافة تمارين عملية لتحسين المهارات المعرفية إلى برنامج تكوينك في الترجمة الشفوية؟

☐ Yes نعم

☐ Noلا

- **Please feel free to share anything else you would like to say or add:**

- **تفضل/ي بمشاركة أي شيء آخر تريد/ين قوله أو إضافته:**

Thank you for your feedback!

شكرا جزيلا

Appendix D : Classroom Observation Rubric

This appendix contains the assessment rubric used for the observational study.

Classroom Observation Rubric			
Language	1. Source and Target Language	a) The teacher asks students to render meaning in SL	+ +
		b) The teacher points out the linguistic and cultural differences between SL and TL	+ + +
		c) The teacher concludes with the final proper TL rendition with the students	+ + +
Targeted Skills	2. Memory	a) The teacher prompts students to recall background knowledge	+ +
		b)The teacher asks students to render the ideas as expressed in the speech	+ +
		c) The teacher prompts students to recall specific details	+ + +
		d) The teacher urges students to extract the main ideas regardless of the form	+ + +
	3. Listening Comprehension	a) The teacher asks students leading questions (Who? When? What? Why?)	+ + +
		b) The teacher corrects contortions/mistakes when rendering meaning	+ +
		c) The teacher repeats the speech for a full and thorough understanding	+ +
		d) The teacher asks student to provide as many correct versions/ translations as possible	+ + +
	4. Public Speaking	a)The teacher asks all students to participate	+ +
		b) The teacher leads the session but allows more speaking and discussion among students	+ + +
		c) The teacher listens to students' questions and engages with their points	+ + +
		d) The teacher allows students to direct the session without much interference	+ +
Theoretical Aspects	5. Interpretive theory	a) The teacher highlights the difference between translation and interpreting	+ + +
		b) The teacher explains the principles of the interpretive theory (listening and analysis, deverbalization, reformulation, avoiding literal translation, …etc)	+ + +
		c) The teacher encourages students to pay attention to the extra-linguistic aspects of the speech (speaker's background, tone, body language, …etc)	+ +
Materials	6. Audio-visual aids	a) The teacher uses authentic recordings/videos with native speakers	+ +
		b) The teacher uses speeches from different domains with interesting and stylistic language	+ +
		c) The teacher chooses relevant topics that students normally have a level of background knowledge in	+ +

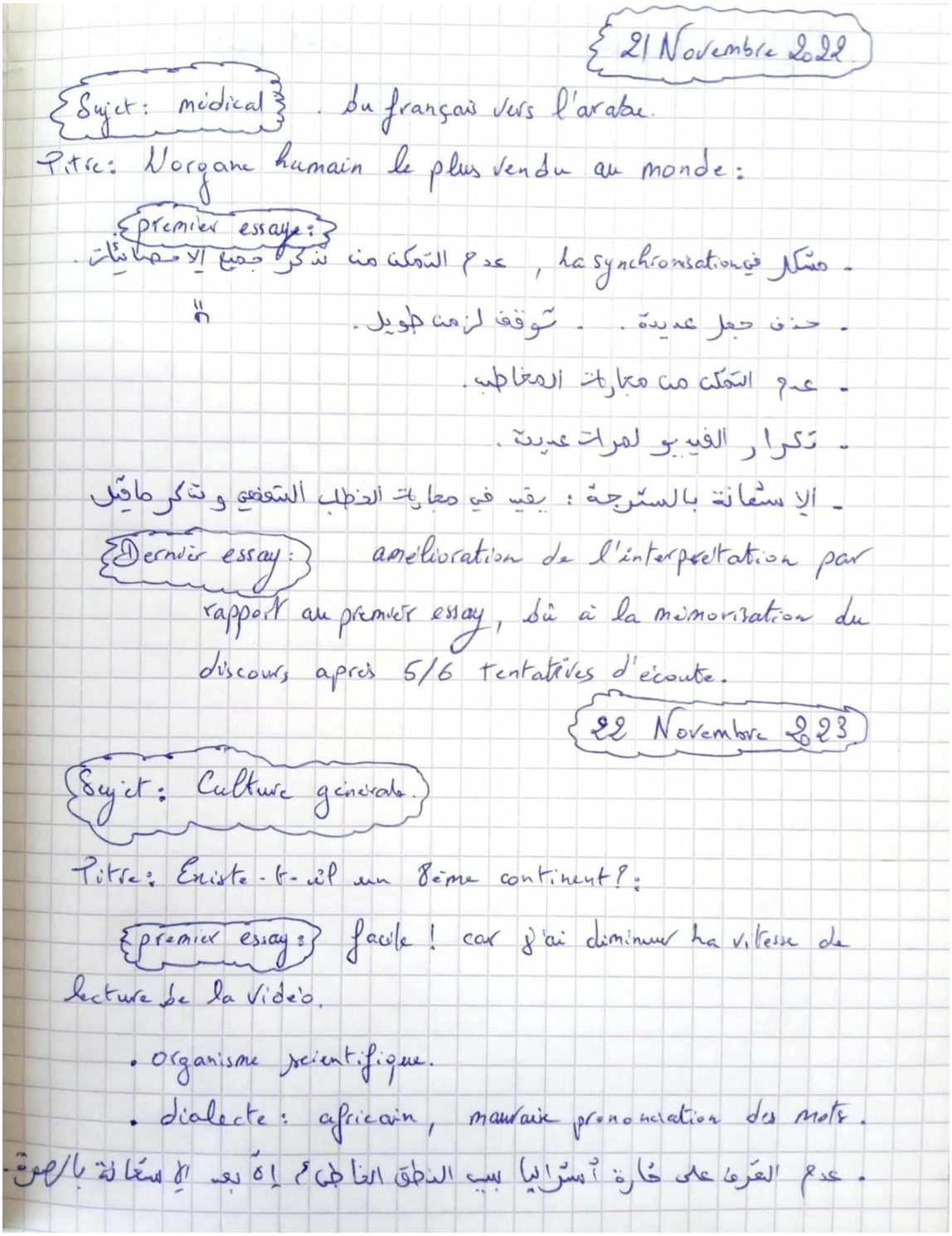
Appendix E: Sheet of Interpreting Difficulties for Reflective Practice

This appendix contains the original sheet distributed to interpreting students for the purpose of Reflective Practice.

1. وجدت صعوبة في فهم الكلمة بسبب اللكنة/اللهجة.
2. وجدت صعوبة في التمييز بين الكلمات بالرغم من معرفتي للموضوع.
3. وجدت صعوبة في تقسيم المقطع إلى وحدات معنى واضحة.
4. عرفت الكلمة لكنني وجدت صعوبة في استرجاع مقابلتها.
5. كنت أركز على الكلمات بمفردها أكثر من محاولة فهم المعنى الكلي.
6. عندما لا أفهم كلمة أو جملة فإنني أتوقف عندها وأنسى الاستماع لباقي المقطع.
7. عندما أحاول فهم معنى الجملة الأولى أجد أن الجمل الموالية قد فاتتني.
8. عندما أركز على فهم فكرة جديدة أجد أنني نسيت الفكرة السابقة.
9. في كثير من الأحيان قد يشرد ذهني وأنسى التركيز على الخطاب.
10. لا يمكنني التمييز بين الأفكار الرئيسية والأفكار الثانوية.
11. لا يمكنني الربط بين كل الأفكار على شكل سلسلة مترابطة.
12. لا يمكنني معرفة المغزى مما يقوله المتحدث (التعبير عن الرأي، محاولة الإقناع، سرد تفاصيل وحيثيات حادثة، الإشادة أو الإدانة...)
13. أجد صعوبة في معرفة بعض الكلمات أثناء الاستماع حتى وإن كنت أعرفها أثناء القراءة.
14. أسأت فهم كلمة لأنها تشبه كلمة أخرى في النطق.
15. توقفت عند معنى بعض المصطلحات الصعبة، الكلمات الغريبة، التعابير الإصطلاحية...
16. فهمت المعنى ولكنني لم أعرف كيف أعيد صياغته.
17. أجد مشكلة في التحدث وبدأ الترجمة بالرغم من أنني فهمت الفكرة الأساسية.
18. لا أستطيع التركيز مع وجود تشويش أو أصوات خارجية.
19. لا أستطيع التحكم في نبرة وحدة صوتي عندما أتكلم.
20. دائما ما أنسى أن أحاكي نبرة صوت وأسلوب المتحدث.

Appendix F: Students' Reflective Practice Assignments

This appendix contains an example of students' reflective practice returned assignments.



21 Novembre 2022

Sujet: médical . du français vers l'arabe.

Titre: L'organe humain le plus vendu au monde:

premier essaye:

- مشكل في synchronisation , عدم التمكن من تذكر جميع المصطلحات.
- حذف جمل عديدة . توقف لزمن طويل.
- عدم التمكن من مجاراة المخاطب.
- تكرار الفيديو لمرات عديدة.
- الإستعانة بالسترجة : يقيم في مجاراة الخطاب المتفوه و تذكر ما قيل

Dernier essay: amélioration de l'interpretation par rapport au premier essay, dû à la mémorisation du discours après 5/6 tentatives d'écoute.

22 Novembre 2023

Sujet: Culture générale.

Titre: Existe-t-il un 8ème continent?:

premier essay: facile ! car j'ai diminuer la vitesse de lecture de la vidéo.

- organisme scientifique.
- dialecte: africain, mauvaise prononciation des mots.
- عدم التعرف على قارة أستراليا بسبب النطق الخاطئ إلا بعد الإستعانة بالصورة.

Appendix G : Article used for Sight Translation Practice

This appendix contains an example for the news article used for Sight Translation Activity.

Guerre Israël-Hamas. Ce que l'on sait de la prolongation de la trêve humanitaire à Gaza

La trêve initiale de quatre jours entre le Hamas et Israël devait prendre fin ce mardi 18 novembre, en début de matinée. Le Qatar, médiateur dans les négociations pour la libération des otages, a annoncé lundi soir la prolongation de cet accord pour une durée de 48 heures supplémentaires. De nouveaux échanges de prisonniers et d'otages sont à prévoir. Voici ce que l'on sait sur la prolongation de la trêve à Gaza.

Alors que de nouveaux otages, dont trois Français, ont été libérés ce lundi 27 novembre, en soirée, par le Hamas, et que 33 prisonniers palestiniens doivent également être relâchés par Israël, plusieurs acteurs appelaient à une prolongation de la trêve humanitaire à Gaza.

Le Qatar, médiateur dans les négociations pour la libération des otages, et acteur majeur de l'accord qui a mené à la trêve, a annoncé lundi soir la prolongation de cette dernière, pour deux jours supplémentaires.

« L'État du Qatar annonce que, dans le cadre de la médiation en cours, un accord a été conclu pour prolonger la trêve humanitaire de deux jours dans la bande de Gaza **»,** a déclaré le porte-parole du ministère qatari des Affaires étrangères sur le réseau social X.

L'accord prolongé de 48 heures

Dans la foulée, le Hamas a confirmé l'extension de la trêve jusqu'à 7 h du matin (heure locale, 6 h à Paris) jeudi 30 novembre. Le mouvement islamiste a indiqué « travailler à une nouvelle liste d'otages ».

Dans un communiqué, il précise que l'accord « avec les frères qataris et égyptiens pour une prolongation de la trêve humanitaire temporaire » sera de « deux jours supplémentaires avec les mêmes conditions que la trêve précédente ».

Une lueur d'espoir et d'humanité » selon l'ONU

Le secrétaire général de l'ONU, Antonio Guterres, a réagi lundi soir à la prolongation de la trêve, saluant une « lueur d'espoir et d'humanité au milieu des ténèbres de la guerre ». S'exprimant à New York, depuis le siège des Nations Unies, il a ajouté, devant la presse, espérer « que cela permettra d'accroître encore plus l'aide humanitaire aux habitants de Gaza qui souffrent tant, en sachant que même avec ce temps supplémentaire il sera impossible de satisfaire tous les besoins immenses de la population ».

Adapted from :Ouest-France Retrieved: 26/11/2023. From: https://www.ouest-france.fr/monde/israel/guerre-israel-hamas-ce-que-lon-sait-de-la-prolongation-de-la-treve-humanitaire-a-gaza-984ef3fe-e869-4cc2-a7ab-f03f87afa396

Appendix H: Pre-test transcripts

This appendix contains the transcription of the audio used for the pre-test.

Pre-test Speech Transcripts:

English: Israeli air raid kills at least 500 in Gaza hospital 'massacre'

There's been widespread shock and international condemnation after Israel launched an airstrike on a hospital in Gaza, killing hundreds of Palestinians. It's the worst single attack since the start of Israel's assault on the besieged strip on the 7th of October, following an incursion by Hamas into southern Israel that killed 1300 people. Tuesday's airstrike targeted AL-AHLI Baptist Hospital in central Gaza, at least 500 people are confirmed dead and it's believed thousands of civilians were inside the hospital at the time of the attack; some were patients whilst many were seeking shelter from the Israeli bombardment. Earlier in the day, at least 6 Palestinians were killed in another attack on a UN-run school.

French: Des centaines de Palestiniens tués dans le bombardement d'un hôpital

Un drame supplémentaire frappe les civiles dans la guerre entre Israël et le Hamas. Hier une roquette a touché l'hôpital AL-AHLI dans la ville de Gaza. Selon le ministère de la santé locale, au moins 500 personnes ont été tuées. L'armée Israélienne dément être à l'origine du tir, selon elle la roquette tombé sur l'hôpital a été tirée depuis la bande de Gaza, elle accuse le Djihad Islamique mais le mouvement islamiste palestinien dénonce des accusations fausses et sans fondement. Le président des Etats Unis Joe Biden est en Israël, il devait rencontrer ce mercredi le président de l'autorité palestinienne Mahmoud Abbas dans une réunion à quatre avec l'Egypte et la Jordanie. La rencontre a été annulée.

Spanish: Bombardeo en hospital de Gaza deja al menos 500 muertos

Y también nos da mucha pena informarle que hubo un bombardeo reciente donde habrían muerto 500 civiles en la Franja de Gaza, 500 palestinos. Esto fue en el Hospital Al-Ahli, en la Franja de Gaza. Decenas de civiles se encontraban refugiados en ese hospital para protegerse de los ataques. El Ministerio de Salud de Gaza, controlado por Jamás confirma 500 muertos. El ejército de Israel, en medio de presiones internacionales para que los ataques sean dirigidos hacia objetivos militares, dice que investiga el informe. De ser así, sería el ataque más mortífero desde el sábado pasado, cuando inició la ofensiva. Una pena informarles que 500 personas, muchos pacientes, muchos civiles refugiados, habrían muerto en un ataque del ejército de Israel en Gaza.

Appendix I: Post-test transcripts

This appendix contains the transcription of the audio used for the post-test.

Post-test Speech Transcripts:

English: Israel-Hamas War: Israeli Strikes Kill Two Palestinian Journalists in Gaza

In Gaza Al-Jazeera journalist Wael Dahdouh is saying goodbye to another family member. His son Hamza al-Dahdouh was killed in an Israeli airstrike on a car near Rafah alongside Mustafa Turaya.According to health officials and the journalists union in Gaza both Palestinians were freelance journalists. A third freelancer Hazam Rajab was wounded. Dahdouh had worked for Aljazeera where his father is the chief correspondent in Gaza. Wael Dahdouh became particularly well known to viewers across the Middle East after he learned during a live broadcast his wife, another son, daughter and grandson had been killed in an Israeli airstrike.

French: Les journalistes tués à Gaza étaient des terroristes

Wael Dahdouh, célèbre correspondant pour la chaîne Al-Jazeera, a perdu plusieurs membres de sa famille dans les frappes israéliennes à Gaza. Ce dimanche son fils aîné Hamza Dahdouh a été tué avec un autre journaliste dans un bombardement. Deux autres ont été blessés dans la même frappe. Selon l'agence de presse palestinienne Wafa, une attaque de drone aurait touché la voiture de Hamza Dahdouh alors qu'il roulait au sud de la ville de Khan-Younes. Lui et les autres passagers seraient tous des journalistes indépendants travaillant à la pige notamment pour des chaînes comme Al-Jazeera ou Palestine Today.Ces frappes ont été immédiatement condamnées. Al-Jazeera a qualifié la frappe d'attaque ciblée et appelé les organisations internationales à tenir Israel pour responsable de ce qu'elle qualifie d'attaque délibérée contre des journalistes.

Spanish: Dos periodistas de AFP y Al Jazeera entre las recientes víctimas de ataques israelíes en Gaza

Una multitud para presentar sus respetos ante los dos últimos periodistas que han muerto en la franja de Gaza, un ataque israelí con dron golpeó su vehículo a primera hora del domingo en el sur del enclave, acabando con sus vidas. Eran Mustafa Thuraya, videôgrafo independiente, colaborador de la agencia francesa AFP, y Hamza Wael Dahdouh, un reportero de Al-Jazeera e hijo del jefe de la oficina del medio qatarí en Gaza, Wael Dahdouh, quien hace más de un mes perdió a parte de su familia en otro ataque de Israel. El dolor de este padre y emblemático periodista gazatí se refleja en su rostro. Acusa al mundo de ignorar la tragedia en Gaza, que no solo mató a su hijo, sino también a decenas de otros reporteros que estaban narrando el conflicto.

Appendix J: Assessment Rubric for Cognitive Interpreting Performance

This appendix contains the assessment rubric used to evaluate the pre-test – post-test results.

Category	Indicators	Excellent (5)	Good (4)	Satisfactory (3)	Needs Improvement (2)	Poor (1)
Active Listening (30%)	Inferencing, summarizing accurately, rendering meaning despite stylistic/idiomatic challenges, accurate reformulation	Consistently applies all strategies effectively, delivering a complete and accurate interpretation	Applies most strategies effectively with minor inaccuracies	Applies strategies inconsistently, some meaning loss	Struggles with strategies, frequent meaning distortions	Fails to apply strategies, significant meaning loss
Working Memory (30%)	Chunking, retaining information and details, background knowledge, fast retrieval of terms	Excellent chunking, strong recall of details, effective use of background knowledge, and quick retrieval	Good chunking, mostly strong recall, background knowledge used occasionally, occasional retrieval delays	Moderate chunking, some details lost, background knowledge applied inconsistently, retrieval slow	Weak chunking, frequent omissions, poor use of background knowledge, retrieval difficult	No effective chunking, major omissions, background knowledge not applied, retrieval failure
Public Speaking (30%)	Fluency, diction, speed/pauses, intonation, presentation	Clear, fluent, well-paced, engaging delivery with confident presentation	Mostly fluent and well-paced with minor hesitations	Some fluency issues, inconsistent pacing, adequate engagement	Noticeable fluency issues, poor pacing, weak engagement	Disfluent, unnatural pacing, lacks engagement

Linguistic Competence (10%)	Accuracy in grammar, vocabulary, and syntax	High grammatical and syntactical accuracy, precise vocabulary, appropriate register	Mostly accurate grammar and syntax, minor vocabulary issues	Some grammar and syntax errors, limited vocabulary	Frequent grammar and syntax errors, weak vocabulary	Severe grammar and syntax errors, incorrect vocabulary, inappropriate register

Appendix K: Proposal for a Cognitive Skills Training Module

This appendix contains the proposed Cognitive Skills Training module.

Cognitive Skills Training Module

Duration: 7 weeks

Target Audience: Interpreting students (pre-service) or early-career interpreters (in-service)

Mode of Delivery: Classroom-based, blended learning, or online

Assessment: Formative and summative assessments using a customized rubric

Module Objectives

By the end of the module, participants should be able to:

1. **Enhance Active Listening** – Extract and process key information efficiently.
2. **Improve Working Memory** – Retain and recall details accurately.
3. **Develop Public Speaking Skills** – Deliver clear, fluent, and engaging renditions.
4. **Engage in Reflective Practice** – Monitor and improve their cognitive performance.
5. **Apply Cognitive Strategies to Interpreting Tasks** – Utilize structured cognitive training techniques in real-life interpreting scenarios.

Module Structure

Week 1: Introduction to Cognitive Skills in Interpreting

Objective: Familiarization with cognitive processes involved in interpreting.

Activities:

- Lecture on interpreting as a cognitive process (attention, memory, comprehension).
- Discussion on cognitive load and multitasking in interpreting.
- Baseline assessment: Pre-test interpreting exercise to assess initial skills.

Week 2: Active Listening & Comprehension

Objective: Train students to listen for meaning, anticipate content, and process idiomatic speech.

Exercises:

- **Idiomatic Gist Exercises** – Listen to a speech, summarize without word-for-word recall.
- **Sentence Drills** – Repeat a sentence in different phrasing while maintaining meaning.
- **Inference Training** – Listen to ambiguous statements and deduce the implied meaning.

Assessment: Listening comprehension test using authentic speeches.

Week 3: Memory & Retention Techniques

Objective: Develop memory strategies for consecutive interpreting.

Exercises:

- **Chunking** – Breaking long messages into smaller, meaningful units.
- **Discourse Outlining** – Identifying key points and argument structures.
- **Mind Mapping** – Using visual tools to link ideas in a speech.

Assessment: Recall and reproduce a structured speech.

Week 4: Speech Segmentation & Fast Retrieval

Objective: Improve information retrieval speed and segmentation in interpreting.

Exercises:

- **Keyword Association** – Linking key terms to concepts.

- **Fast Retrieval Drills** – Listening to complex speech, pausing, and responding quickly.
- **Simulated Consecutive Interpreting** – Using short speech segments for immediate recall.

Assessment: Real-time processing task.

Week 5: Public Speaking & Delivery Techniques

Objective: Enhance fluency, diction, and confidence in speech delivery.

Exercises:

- **Pace Control Training** – Practicing controlled speech rate and pausing.
- **Intonation & Stress Exercises** – Using prosody for emphasis and clarity.
- **Impromptu Presentations** – Delivering short speeches on given topics.

Assessment: Fluency and pronunciation rating.

Week 6: Reflective Practice & Self-Monitoring

Objective: Train students to assess and improve their own cognitive processes.

- **Exercises**: Learning Journals – Writing reflections on interpreting challenges.
- **Self-Recorded Sessions** – Reviewing and analyzing own interpreting performances.
- **Peer Feedback** – Identifying strengths and areas for improvement.

Assessment: Self-evaluation report.

Week 7: Integration & Final Assessment

Objective: Apply cognitive strategies in a comprehensive interpreting task.

Activities:

- **Final Simulated Interpreting Task** – Combining all skills under realistic conditions.
- **Instructor & Peer Assessment** – Using a structured assessment rubric.
- **Post-Test Analysis & Feedback Session** – Comparing pre-test and post-test results.

Assessment Methods

- **Formative Assessments** (weekly): Self-evaluations, peer feedback, and quizzes.
- **Summative Assessments** (pre-test vs. post-test): Evaluating interpreting performance improvement.
- **Assessment Rubric**: Evaluates Active Listening (30%), Working Memory (30%), Public Speaking (30%), and Linguistic Competence (10%).

Final Recommendations

- This module should be integrated into interpreter training curricula as a mandatory component.
- Instructor Training is Essential – Trainers must be equipped to teach cognitive strategies effectively.
- Continuous Evaluation and Refinement – The module should evolve based on feedback and research.

Appendix L: Pre-test and Post-test Transcripts

This appendix presents the complete transcripts of students' pre-test and post-test performances, along with their English translations.

Students	Interpretations			
	Pre-Test		Post-Test	
	English Translation	Arabic	English Translation	Arabic
S01	"(1) [*Long filled pause]*…in war which started between Israel and Gaza in *[Silent pause]* in Hamas there were one hundred killed [*Filled pause*] near the hospital [*Longfilled pause*] and the ministry of Health *[Silent pause]*I don't remember *[Expressed in colloquial Arabic]* *"*(2) [*Filled pause*] There was the *[Silent pause]*The Israeli army was dropping dropping on the on the Palestinian people and [*Filled pause*] dropping the bombs bombs in Gaza [*Filled pause*] on the Palestinians [*Filled pause*] "(3) [*Filled pause*] B.. [*Filled pause*] President Biden on Wednesday was going to give [*Filled pause*].. agreement with Mahmod Abbas but the [*Filled pause*] the [*Silent pause*] was canceled the the [*Silent pause*] I forgot that word *[Expressed in colloquial Arabic and French]*	"(1)اااه... ااه في حرب التي قامت بين إسرائيل وغزة في.. في حماس كان هناك مئة قتيل اه قرب المستشفى اه.. اه.. ووزارة الصحة ...[ما عقلتش]... (2)اه كان ال... كان العسكر الإسرائيلي يطلق يطلق على ال على الشعب الفلسطيني اه وي.. اه.. ويطلق القنابل قنابل في غزة أه.. على الفلسطينيين اه... (3)اه ..ب..اه.. الرئيس بايدن يوم الأربعاء كان سيلقي اه... اتفاق مع محمود عباس لكن ال.. اه.. ال...الغى ال... [نسيتlemotهذاك]"	"(1) [*Filled pause*] Wael el-Dahdouh [*Filled pause*] is the face for Al-Jazeera whom his son died in [*Filled pause*] in the blockade of Gaza this Sunday and he has lost his wife before [Long *Filled pause*] and his son Halza [*Filled pause*] the name of his son that died he is called Hamza [*Filled pause*]… (2) [Long *Filled pause*] his son who was in the car [*Filled pause*]and they h hit it in Khan Younes [*Filled pause*] most people who were there were journalists [*Filled pause*] they were witnesses to that the that situation that happened [Long *Filled pause*] and the journalist has said the journalist of Al-Wafaa a Palestinian journalist called Al-Wafaa [*Filled pause*] had shared this surprising news (3) the… the authorities the authorities have summoned the [*Filled pause*] the authorities have summoned the [Long *Filled pause*] the situation was critical [*Filled pause*] I don't remember *[Expressed in colloquial Arabic]*	"(1) اه وائل الدحدوح.. اه هو وجه للجزيرة الذي توفى ابنه في..اه في حصار غزة هذا الأحد كما أنه فقد كما أنه فقد زوجته من قبل...اه.. اه.. و ابنه حمزة اه اسم ابنه الذي توفى يسمى حمزة اه... (2) اه...اه ابنه الذي كان في السيارة اه وقاموا ب [باصطدامها] اه في خان يونس.. اه كان معظم الناس الذين كانوا هناك عبارة عن صحفيين اه كانوا عبارة عن شاهدين لذلك ال لذلك الموقف الذي جرى.. اه... اه كما قالت الصحفية صحفية الوفاء صحفية صحفية فلسطينية تسمى بالوفاء اه.. نشرت هذا الخبر المفاجئ (3) ال..السلطات قامت السلطات باستدعاء ال اه.. قامت السلطات باستدعاء ال....اه... حيث كانت الأوضاع حرجة اه...[ما عقلتش]"
S02	"(1) An explosion had lead to the death of fifteen thousand[*Filled pause*] Palestinian Palestinian citizens [*Filled pause*] while the others fled to the hospital (2) Hamas stated that there are five thousand [*Filled pause*] victims whereas [*Filled pause*] Israel[*silent pause*] [The rest I	"(1) لقد أدى انفجار إلى وفاة خمسة عشر ألف اه.. فلسطيني مواطنين فلسطينيين اه.. في حين الآخرين لجؤوا إلى المستشفى (2)صرحت حماس بأن هناك خمسة آلاف اه.. ضحايا في حين ااه.. إسرائيل... la [suiteما...] (3) ومن هذا المنبر اه.. نستنتج أنه- نلاحظ أنه أكثر انفجار مؤديا لأكبر عدد	"(1) [*Filled pause*] we give our respects to the victims to two journalist victims two victims in the Gaza strip due to the Israeli attacks [*Filled pause*] in the south (2) [*Filled pause*] and who we lost and who we lost is Hamza the collaborator with the French newspaper and [*Filled pause*] el-D*[Self-interruption]* the son of Wael el-Dahdouh	"(1) اه نقدم احتراماتنا لضحايا لضحيتين صحفيين ضحيتين بقطاع غزة بسبب الهجومات الإسرائيلية اه بالجنوب (2) ااه والذي فقدنا والذي فقدنا حمزة المتعاون مع الصحيفة الفرنسية واه وائل الدح- وابن وائل الدحدوح اه والذي فقد العديد من عائلته مسبقا (3) اه لقد واصل وائل الدحدوح عمله

	don't…]*[Expressed in colloquial Arabic and French]* (3) and from this [*Filled pause*] we deduce that*[Self-interruption]*we remark that it is the deadliest explosion leading to the highest number of deaths recently".	من الوفيات في الآونة الأخيرة"	[*Filled pause*] and who has already lost many of his family before (3) [*Filled pause*] Wael el-Dahdouh had continued his work despite losing his family continuing his coverage of the situation"	بالـرغم مـن فقدانـه لعائلتـه مواصـلا تغطيته للأوضاع"
S03	"(1) [The word already slipped …drama..] *[Expressed in colloquial Arabic and French]* [*Filled pause*] huge drama [*Filled pause*] happened in Gaza [*Filled pause*] as Israel struck a hospital in Gaza and according to the [*silent pause*]the ministry of[*silent pause*]according to the ministry more than seven [*Filled pause*] seven.. (2)the [*Filled pause*] it has denied [*unintelligible muttering*] Israel had denied the news and [*silent pause*]said that the[*silent pause*]that Hamas did this the the accident and [*silent pause*] [It slipped] *[Expressed in colloquial Arabic]* (3) the…had [*silent pause*]the American President Joe Biden [*Filled pause*] to meet the [*silent pause*]the the president [*silent pause*]Mahmoud A[*silent pause*]Mahmoud Abbas the palest*[Self-interruption]*the Palestinian president Mahmoud and in a meeting [*silent pause*]in the meeting of four? The four meeting but she but this meeting was postponed".	"(1)[drame الكلمة راحتلي Déjà] اااه... دراما كبيرة اه حدثت في غزة اااه... فقـد ضـربت إسـرائيل مستشـفى في غـزة وحسـب الـ.. وزارة الـ... حسـب الـوزارة أكثر من العدد سبع اه..سبعة (2)....كـــذّبت الـ.. اااه.... (تمتـــة) كذّبت إسرائيل الخبر و... قال بأنه الس.. أنه حماس الذي قام ب بهذا الـ الحادث و... [راحتلي] (3)كان على الـ..... الرئيس الأمريكي جـو بايـدن اه أن يلتقـي بال... بال... الـرئيس الـ... محمـود ع.. محمـود الـرئيس الفلســـطيني محمـــود وفي الpalest- ملتقى... في ملتقى الأربع؟ ملتقى الأربع ولكنها ولكن تم تأجيل هذا الملتقى"	"(1) [*Filled pause*]Wael el-Dahdouh and he is a reporter in Al Jazeera he has lost many of [*Filled pause*] his family members in [*Filled pause*] in an airstrike in Gaza and this time he has lost his son*[Self-interruption]*his eldest son and [*Filled pause*] and who was bombed along with his friend (2) and according to an agency a Palestinian agency in Rafah the these journalists' car was bombed which was heading south and these journalists work in*[Self-interruption]*they work they have freelance work so they are journalists who do freelance work they work in ch channels like Al Jazeera (3) and it has these [*Filled pause*] the these strikes were reported as Al Jazeera [complained on] Israel and said that it is responsible [of] these strikes"	"(1) ااه وائـل الدحـدوح وهـو مراسـل في الجزيرة لقد خسر العديد من ااه من أفـراد عائلتـه في ااه في قصـف في غـزة وهـذه المرة لقد خسر ابنه–نجله الكبير واه والذي تم قصفه مع صديقه (2) وحسب وكالة وكالة فلسطينية في [Rafah] لقد تم قصف سيارة هذه هذا الصحفيين التي كانت متوجهة إلى الجنـوب وه هـذين الصـحفيين يعمـلان في– يعمـلان لـديهم عمـل حـر فهمـا صـحفيان يعمـلان عمـل حـر فهـم يعملون في ق قنوات مثل الجزيرة (3) ولقـد لقـد تم ال اه [الشـكاية] بهـذه الضـربات فقـد [شـكت] الجزيـرة بإسـرائيل وقالـت بأنهـا هـي المسـؤولة [بهذه]القصفات"
S04	"(1) A tragic situation was in the Gaza strip between the Zionist entity and Hamas were[*silent pause*] and this that is what we saw in Al-Ali hospital in Gaza as five hundred people died (2) [*silent pause*] the	"(1)حالـة مأسـاوية كانـت في قطـاع غـزة بـين الكيـان الصـهيوني وحمـاس حيـث... وهـذا وذلـك مـا رأيناه في مستشـفى العلي بغزة فقد مات خمسمائة شخص (2).....الفلســـطينيين يعـــني الـ– الإسرائيليين كانت هناك اتهامات لا أساس	"(1) *[Taking notes]* Wael el-Dahdouh is a reporter at Al Jazeera channel [*silent pause*] he has [*Filled pause*] lost members of his family before in and Israeli [*Filled pause*] airstrike against Gaza and has now lost his son Hamza el-	"(1) [أخـذ نقـاط] وائـل الدحـدوح مراسـل صـحفي في قنـاة الجزيـرة.... خسر اه أفراد عائلته من قبل في قصف اه إسـرائيلي ضـد غـزة والآن فقـد ابنـه حمزة الدحدوح مع مراسل صحفي آخر وأيضا خلف اثنان من الجرحى

	Palestinians meaning the*[Self-interruption]* the Israelis there were unfounded accusations [*Filled pause*] towards them by the the Palestinians and that means what was admitted… (3) [I don't know] *[Expressed in French]* [*silent pause*] the president Joe Biden w will [*filled pause*] will meet the Palestinian president Mohamed Abbas [*silent pause*] along with [*silent pause*] along with [*filled pause*] two more [*silent pause*] parties and they are Egypt and [*silent pause*] Jordan?	لها من الصحة االم.. اتجاههم من طرف ال الفلسطينيين وهذا يعني ما أقر به [Je sais pas](3) ...الرئيس جو بايدن س سوف يقوم ب اا.. بال لقاء الرئيس الفلسطيني محمد عباس.. رفقة.. رفقة اه طرفين .. آخرين وهما مصر و..الأردن؟"	Dahdouh with another reporter and has resulted in two injured (2) *[Taking notes]* [*Filled pause*] these [*Filled pause*] work in in journalism where they*[Self-interruption]*they came under an Israeli attack in the south of Khan Younes *[Self-interruption]* at*[Self-interruption]*in their car where they were driving the car and all of these are journalists working in media outlets[*Filled pause*] like the Gaza channel and Palestine Today (3) *[Taking notes]*There attacks were considered by Al Jazeera deliberate attacks by Israel and [*Filled pause*] demanded from the concerned authorities [*Filled pause*] to prosecute Israel"	(2) [أخذ نقاط] اه يعمل اه هؤلاء في في الصحافة حيث قام- تلقوا هجمة إسرائيلية في جنوب خان يونس اه عند- في سيارتهم حين كانوا يسوقون السيارة وكل هؤلاء صحفيين يعملون في قنوات صحفية اه مثل قناة غزة وفلسطين اليوم (3)[أخذ نقاط] هذه الهجمات اعتبرتها قناة الجزيرة هجمات مقصودة من إسرائيل واه طلبت من ال الجهات المعنية اه... محاكمة إسرائيل"
S05	"(1) [*Filled pause*] a tragedy hits[*Filled pause*] hits Gaza [*Filled pause*] due [*Filled pause*] due to the war between Hamas and Israel [*Filled pause*] according to the ministry of [*silent pause*]according to the ministry of f*[Self-interruption]*the ministry of the interior yesterday [*Filled pause*] as a result of a missile [*Filled pause*] was thrown at at a hospital in Gaza five hundred people died (2) [*Filled pause*]Israel denied [*Filled pause*] Israel denied this incident and says that the missile [Long *Filled pause*] was thrown from Gaza [*Filled pause*] but the Islamic movement says the opposite (3) [*Filled pause*] the American president Joe Biden [*Filled pause*] had to meet [*Filled pause*] with the [*silent pause*] wih the Palestinian president Mahmoud Abbas in a	"(1) اه مأساة تضرب االه.. تضرب غزة االه.. نتيجة اه نتيجة حرب بين حماس وإسرائيل االه.. حسب وزارة ال.. حسب وزارة الخ- الداخلية البارحة االه.. نتيجة قذيفة االه.. فألقيت على على مستشفى في غزة توفى خمسمائة شخص (2) اه كذبت إسرائيل االه.. كذبت إسرائيل هذه الحادثة وتقول أن القذيفة االه.. ام.. ألقيت من غزة االه.. لكن الحركة الإسلامية قالت عكس ذلك (3) اه الرئيس الأمريكي جو بايدن اه.. اه كان يجب على الرئيس الأمريكي جو بايدن أن يلتقي في اه مع ال.. مع الرئيس الفلسطيني محمود عباس في لقاء رباعي مع الأردن ومصر"	"(1) [*Filled pause*] Wael el-Dahdouh the reporter of Al Jazeera channel [*Filled pause*] a big number of his family members died [*Filled pause*] and this Sunday his son died and [*Filled pause*] another person of another journalist*[Self-interruption]*the son of another journalist (2) [*Filled pause*] Hamza el-Dahdouh died [*Filled pause*] while he was on h*[Self-interruption]*o his way by his car in in Khan Younes by the the drone [*Filled pause*] and there weremany passersby [*Filled pause*] from the journalists in Al Jazeera channel and Palestine today (3) [*Filled pause*]he died instantly after receiving these blows [*Filled pause*] and and Palestinian journalists have [*Filled pause*] called international organizations [*Filled pause*] to protect the rights of freelance journalists [*Filled pause*] and …"	"(1) اه وائل El Dadouh مراسل قناة الجزيرة اه توفي عدد كبير من أفراد عائلته اه وهذا الأحد توفي ابنه واه شخص آخر لصحفي آخر- وابن لصحفي آخر (2) اه توفي حمزة الدحدوح اه وهو في ط- في طريقه بسيارته في في خان يونس اه بال[الدرون] اه.. وكان هناك العديد من المارين اه من الصحفيين في قناة الجزيرة و فلسطين اليوم (3) اه مات فور تلقيه هذه الضربات اه و وقام الصحفيون الفلسطينيون ب اه بمناداة المنظمات الدولية اه لحماية حقوق الصحفيين الأحرار... اه و..."

	quadrilateral meeting with Jordan and Egypt".			
S06	"(1) I understood what she said [*Long silent pause]*… So in a way *[Expressed in French*] she talked about [*Filled pause*]there was shock [*Filled pause*] and as a result of *[Filled pause*] the strike that Israel [colloquial word in Arabic] on the [*Filled pause*] the hospital, and ...she also talked about Hamas, I forgot what she said I can't translate [*expressed in colloquial Arabic]*. (2) I can't translate but I'll still tell you what she said*[expressed in colloquial Arabic and French]*[*Filled pause*] there were five hundred dead, *[Filled pause]…*and about a thousand, a thousand *[Filled pause]* injured, they weren't all patients but there was also refugees from the war. (3)Around six*[Filled pause*] six people killed*[Silent pause]…*Un-ian school? I didn't understand".	"(1) فهمت ما قالت [وقفة طويلة]... Donc en quelque sorte تحدثت عن ال..اه.. كانت هناك صدمة واه..نتيجة عمل ال..ال..القصف [لي دارته] إسرائيل على ال.. على المشفى و..[هدرت تاني] على حماس [نسيت شا قالت]. (2) Je peux pas traduire mais comme même نقولك شا قالت] اه... كان هناك خمسمائة موتى ال..اه..وحوالي الف الف اه..مصاب لم يكونوا كلهم مرضى بل كان هناك أيضا لاجئين من الحرب. (3) حوالي ست اااه...ست أشخاص قتلوا ... ? Un-ian schoolلم أفهم.	"(1) He, and here Wael Dahdouh says goodbye to a son, another son, Wael Dahdouh, [*Filled pause*] who died from [*Filled pause*] an Israeli airstrike. (2) [*Filled pause*] according to the, the news, both were [*Filled pause*] journalists. (3) [*Filled pause*] Dahdouh [*Filled pause]* worked in the, in Al Jazeera where his father was the director [*Filled pause*] and he was killed [*Filled pause*] and it was bombed [*Filled pause*] and his entire family died when they were bombed by Israel".	"(1) هو- وهنا يودع وائل الدحدوح ابنا ابنا آخر وائل الدحدوح اه الذي توفى جراء اه قصف إسرائيلي (2) اه ووفقا لل للأخبار كان كلاهما اه صحفيين (3) اه كان اه الدحدوح يعمل في ال في الجزيرة حيث كان أبوه المدير اه وقتل اه وقد قصفت ااه كل- وقد توفت كل عائلته حيث قصفت من طرف إسرائيل "
S07	"(1) it has the war has begun which was la*[Self-interruption*] was launched by Israel on Palestine [*Filled pause*]at b at the beginning of October [Long *Filled pause*] and which was followed by and Israeli airstrike on a hospital [*Filled pause*] in [*Filled pause*] in Palestine in Gaza and which left [*Filled pause*] more than which was and which was in seven October and which left [*Filled pause*] hundreds of thousands dead [*Filled pause*] and this was as a response to the Hamas movement which did which attacked Israel and killed	"(1) لقد لقد بدأت الحرب التي شن- التي شنتها إسرائيل على فلسطين اه.. في ب في بدايات أكتوبر اااه... والذي تبعها قصف إسرائيلي لمستشفى اه ب اه فلسطين بغزة والذي خلف اه أكثر من الذي كان والذي كان ب سبعة أكتوبر والذي خلف اه.. مئات الآلاف من القتلى ااه.. وكان هذا كرد على حركة حماس التي قامت التي قامت بالهجوم على إسرائيل في اه.. التي قامت بالهجوم على إسرائيل وقامت بقتل اه.. أربعة عشر ألف إسرائيلي (2) حين قاموا بال بقصف مستشفى غزة اه.. مستشفى غزة عن طريق اه القصف الجوي اه خلف هذا خلف هذا قتلى كثيرين اه نقدر أن نحدد نحدد عددهم	"(1) [*Filled pause*] in Gaza the journalist of Al Jazeera is saying goodbye to another member*[Self-interruption]*another member of his family and that is his son Hamza [*Filled pause*] el-Dahdouh who was killed in an Israeli airstrike [*Filled pause*] yesterday (2) such that the Palestinians and where and and the journalists too were [*Filled pause*] attacked by the strike (3) Wael el-Dahdouh who works for Al Jazeera channel as a journalist and media professional*[Self-interruption]a*nd as a media professional as his father is also an official in [*Filled*	"(1) اه في غزة صحفي الجزيرة يودع عضوا آخرا- فردا آخرا من عائلته وهو ابنه حمزة ااه الدحدوح الذي قتل في قصف إسرائيلي اه البارحة (2) بحيث أن الفلسطينيين وحيث و و الصحفيين أيضا تعرضوا ل ااه القصف.. (3) وائل الدحدوح الذي يعمل لدى قناة الجزيرة اه كصحفي وكإعلامي- وكإعلامي بحيث أن والده هو أيضا مسؤول في اه غزة اه وتعرضت ابنته وأيضا حفيده إلى القتل جراء قصف إسرائيلي"

	[*Filled pause*] fourteen thousand Israelis (3) when they did the the airstrike on Gaza hospital [*Filled pause*] Gaza hospital through [*Filled pause*] the airstrike [*Filled pause*] this left this left many dead [*Filled pause*] we can determine determine their numbers by six thousand killed and also the hospital had a thousand [*Filled pause*] a thousand Palestinian civilians [*Filled pause*] and who were also killed because of the Israeli attack on the hospital (3) and on the same day there and on the same day six Palestinians had been killed [*Filled pause*]outside the hospital because of another attack".	بستة آلاف قتيل وأيضا احتوى المستشفى على ألف اه.. على ألف من الفلسطينيين المدنيين اه والذين أيضا قتلوا جراء الهجوم الإسرائيلي على المستشفى (3) وفي نفس اليوم قد وفي نفس اليوم فقد قتل ستة فلسطينيين اه خارج المستشفى جراء قصف آخر"	*pause*] Gaza [*Filled pause*] and his daughter and also his grandson were killed due to an Israeli airstrike"	
S08	"(1) [Long *Filled pause*] It is a shocking event after [*Filled pause*] the Israeli planes struck a hospital in Gaza and killed more than a thousand people [*Filled pause*] and it is the event or the biggest targeting since the war that was launched on the seventh of October after Hamas launched [*Filled pause*] after Hamas targeted Israel and killed more than [*silent pause*]three hundred people (2) [Long *Filled pause*] [The idea slipped] [*expressed in colloquial Arabic]* [Long *Filled pause]…* [It truly slipped excuse me for a minute teacher] [*expressed in colloquial Arabic]*The planes targeted the Hospital of Sh*[Self-interruption]* [I don't know] [*expressed in colloquial Arabic]*Al – Shifa [God knows] [Long *Filled pause*] in the middle of Gaza and has killed more	"(1) االه... إنه حدث صادم بعد أن اه قصفت اه الطائرات الإسرائيلية مستشفى في غزة وقتلت أكثر من ألف شخص اه.. وهو الحدث أو هو الاستهداف الأكبر منذ الحرب التي انطلقت في السابع من أكتوبر بعد أن أطلقت حماس اه بعد أن استهدفت حماس إسرائيل وقتلت أكثر من... ثلاث مئة شخص (2)االم..اه.. [راحتلي الفكرة].... اه.. [راحتلي فعلا اسمحيلي أستاذة دقيقة]... استهدفت الطائرات مستشفى الش.. [مانيش عارفة] الشفاء [الله أعلم] اه..في اه في وسط غزة وقتلت أكثر من اه.. خمسمائة خمسين خمسمائة شخص اه.. وكان هناك متواجد اه.. [زعمة] عدد من اه المدنيين المتواجدين في المستشفى اه والجرحى.. (3) اه.. و في استهداف آخر قتل على الأقل ستة أشخاص في استهداف ل..اه مدارس الأونروا"	"(1) In Gaza [*Filled pause*] Wael el-Dahdouh [*Filled pause*] the reporter of Al Jazeera channels says goodbye to another member of his family [*Filled pause*] he lost his son Hamza in [*Filled pause*] an Israeli airstrike targeting [*Filled pause*] h…his car with*[Self-interruption]*where he was in which he was with [*Filled pause*] Mustapha Thuraya (2) [*Filled pause*]…they were working under the united nations the the journalists they were two independent journalists [*Filled pause*] and in addition to another independent journalist Hazim Rajab [*Filled pause*] the strike was in [I forgot it before] *[Expressed in colloquial Arabic*] they were in south Rafah or in the Rafah area[*Filled pause*] the the journalist Hazim Rajab was wounded in the strike (3) [*Filled pause*]el-Dahdouh is the eldest son*[Self-interruption]* [*Filled pause*]	"(1) في غزة اه يودع وائل الدحدوح اه مراسل قناة الجزيرة فردا آخر من عائلته اه فقد ابنه حمزة في اه استهداف بالطيران الإسرائيلي اه ل.. لسيارته مع– التي كان التي كان فيه معها التي كان معه فيها اه مصطفى ثريا (2) االه.. كانوا يعملون في إطار الأمم المتحدة ال الصحفيين كانا صحفيان مستقلان اه وإضافة إلى صحفي مستقل آخر حازم رجب اه. الاستهداف كان في [نسيتها قبيل] كانا في جنوب رفح أو في منطقة رفح اه.. ال الصحفي حازم رجب أصيب في هذا الاستهداف (3) االه الدحدوح هو الابن الأكبر– اه حمزة الدحدوح هو الابن الأكبر لوائل الدحدوح اه الذي فقد الذي فقد الذي فقد ابنه– زوجته وابنه وابنته وحفيده في استهداف اه إسرائيلي من قبل وهو شخصية معروفة في في هذه الأثناء في قطاع غزة "

	than [*Filled pause*] five hundred fifty five hundred people [*Filled pause*] and there were [*Filled pause*] [As in] [*expressed in colloquial Arabic]*a number of [*Filled pause*] civilians in the hospital [*Filled pause*] and wounded (3) [*Filled pause*] and in another targeting at least six people were killed in another targeting of [*Filled pause*] UNRWA schools".		Hamza el-Dahdouh is the eldest son of Wael el-Dahdouh [*Filled pause*] who lost who lost who lost his son*[Self-interruption]* his wife and his son and his daughter and his grandson in an Israeli [*Filled pause*] airstrike before and he is a known personality at at the moment in the Gaza strip"	
S09	"(1) [Long *Filled pause*][Anyways] [*Filled pause] [*Wait just a little minute…so.. what I recalled immediately…] [*expressed in colloquial Arabic and French]* [*Filled pause*] a rocket hit [*Filled pause*] Ben-Ali hospital in Gaza [*Filled pause*][Drama Drama...Oh God] [*expressed in Arabic and French]* [*Filled pause*] a tragedy [*silent pause*] a tragedy [*Filled pause*] a tragedy occurred [*Filled pause*] in [*silent pause*] in in the war between Gaza and Palestine [Long *Filled pause*] and Israel [I don't remember anymore I should've taken notes] [*expressed in French]* (2) [So] [*expressed in French]* [Long *Filled pause*] it has claimed [*Filled pause*] Israel has claimed that [*Filled pause*] the rocket had been launched by Gaza by a military base from Gaza but [*Filled pause*] but it is wrong information (3) [*Filled pause*] the American president Joe Biden [*Filled pause*] is currently in Israel and he was abou about to meet with the Palestinian president with four other countries including [Egypt]	"(1)اه..اه...[المهم] اه.. [Attendez juste une petite minute]…[donc]... اللي شفيت عليهdirectement]اه صاروخ ضرب اه مستشفى بن علي في غزة اه .. [drame drame].[يا ربي] اه مأساة.. مأساة اه جرت مأساة اااه... في.. في الحرب بين غزة وفلسطين اااه... وإسرائيل... [Je me rappelle plus j'aurai du prendre des notes] (2) [alors] اااه... زعمـــــت اااه.. زعمت إسرائيل بأن اه الصاروخ قد تم إطلاقه من طرف غزة من طرف قاعدة عسكرية من غزة لكن اه.... لكنها معلومات خاطئة (3) اه الرئيس الأمريكي جو بايدن اه.. يتواجد حاليا في إسرائيل وكان على بصدى بصدد الالتقاء مع الرئيس الفلسطيني مع أربع دول أخرى منها [l'Egypte]–ااه مصر والأردن لكن اللقاء تم إلغاؤه"	"(1) He is Wael el-Dahdouh a reporter in Al Jazeera [*Filled pause*] on h*[Self-interruption]*on Sunday members of his family were killed in an Israeli airstrike (2) [*Filled pause*]according to the Palestinian news agency? [*Filled pause*] they were attacked and were killed in a traffic accident? [*Filled pause*] no [*Expressed in French*] (3) and this [*Filled pause*] and this airstrike was accuse*[Self-interruption]*was condemned and Israel was accused and it was [*Filled pause*] demanded from international organizations to [*Filled pause*] to prosecute Israel for its action".	"(1)إنه وائل الدحدوح مراسل في الجزيرة اه يوم هـ- يوم الأحد قتل أفراد من عائلته في خلال قصف إسرائيلي (2) اه حسب وكالة الأنباء الفلسطينية؟ اه قد تعرضوا لهجمات وقد قتلوا في حادث مرور؟ اه .. [non] (3) وهذه ال ال وهذا القصف قد تم اتهام- إدانته وقد تم اتهام إسرائيل و تم ال الطلب من المنظمات العالمية ب اه بمحاكمة إسرائيل على فعلتها "

	[*expressed in French] [Self-interruption]*Egypt and Jordan but the meeting was canceled".			
S10	"(1)they did airstrikes [Long *Filled pause*] attacks on P [*Filled pause*] on on the on the Palestinians [*silent pause*] in Gaza [*LongFilled pause*] which resulted in killing many of the the people in Gaza (2) The Palestinian minister of Health [*Filled pause*] confirmed that there were [silent *pause*] hundreds dead [Long *Filled pause*] [quinientos de...] hundreds killed in this war (3) in this [*silent pause*] [I didn't understand anything] [*expressed in French]*	"(1) قاموا بقصفات اااه... هجومية على ف اه على على ال على الفلسطينيين..في غزة... اه... مما تسبب في قتل الكثير من ال من الشعب في غزة (2) وزير الصحة الفلسطيني اه أكد أن هناك.. مئات من القتلى.. اه.. .. [quinientos de...]مئات القتلى في هذه الحرب... (3) في هذا ال... [J'ai rien compris]...	"(1) [Long *Filled pause*] this this journalist spoke in [*Filled pause*] line on Al Jazeera channel about [*Filled pause*] dead [*Filled pause*] about the dead who were killed in the south of the area [*Filled pause*] in the south of the area (2) [*Filled pause*]Wael el-Dahdouh [*Filled pause*] [one minute] Wael el-Dahdouh spoke in Al Jazeera about the death of his family and [*Filled pause*] his son who died [*Filled pause*] recently [*Filled pause*] [si, su hijo que…] (3) [*Filled pause*] [He kept talking about his son the…] [*Expressed in colloquial Arabic*] who died in [*Filled pause]* was killed in [*Filled pause*] the massacres that happened in this area".	"(1)اه.... اه تحدث هذا ال ال الصحفي في اه على المباشر في قناة الجزيرة عن اه قتلى ال عن ال الموتى الذين قتلوا في جنوب المنطقة.. اه في جنوب المنطقة.. (2) اه وائل الدحدوح اه [دقيقة] وائل الدحدوح تحدث في اه في قناة الجزيرة عن مقتل عائلته واه ابنه الذي توفي اه مؤخرا .. اه [si, su hijo que..] (3) اه..[بقا يهدر على ابنو ال...] الذي توفي في اه قتل في اه المجازر التي حدثت في هذه المنطقة.."
S11	"(1) A great conflict between the the Palestinian side and the Israeli side which lead to the bombing of a hospital and the injury of five hundred people (2) where it is directed the the Israeli side accuses the the Hamas movement that it bombed the the hospital and that the movement [*Filled pause*] Hamas exonerates itself from the accusations directed against it (3) [*Filled pause*] president Joe Biden was was the president Joe Biden had to m *[Self-interruption]*or met the president Joe Biden with the Palestinian president [*LongFilled pause*] and the meeting [*Filled pause*] had multiple parties including Jordan Egypt and Palestine".	"(1) صراع عظيم بين ال الجهة الفلسطينية والإسرائيلية مما أدى إلى قصف مستشفى وإصابة خمسمائة شخص (2) حيث يوجه ال توجه الجهة الإسرائيلية اتهامات إلى ال حركة حماس بأنها هي من قصفت ال المستشفى وأن ال اه وأن حركة حماس تبرئ نفسها من الاتهامات الموجهة إليها (3) اه الرئيس جو بايدن كان كان على الرئيس جو بايدن أن ي- أو التقى الرئيس جو بايدن مع الرئيس الفلسطيني اااه.. وكان الاجتماع اه له عدة أطراف منها الأردن مصر وفلسطين"	"(1) [*Filled pause*].. Hamza el-Dahdouh is a journalist from Al Jazeera channel and he has lost many of his family members and as well as well [*Filled pause*] another journalist (2) Through the the Palestinian media he was k*[Self-interruption]*the son of el-Dahdouh was killed by a drone plane [*Filled pause*]and he was killed by a drone and there were independent journalists [That's it it's gone] [*Expressed in colloquial Arabic and French*] (3) and these strikes were like a massacre[*Filled pause*] these strikes were a massacre and [*Filled pause*] [accused] [*Expressed in French*] and Al J*[Self-interruption]*Al Jazeera channel had accused Israel of these airstrikes".	"(1) اه.. حمزة الدحدوح هو صحفي من قناة الجزيرة وقد خسر العديد من أفراد عائلته وكذا وكذا اه صحفي آخر (2) من خلال ال الصحافة الفلسطينية فقد ق- قتل ابن الدحدوح من خلال طائرة ال[الدرون] اه... اه وقد قتل من طائرة الدرون وكان هناك صحفيين مستقلين [c'est bon راحت]... (3) وهذه الضربات كانت بمثابة مجزرة اه هذه الضربات كانت بمجزرة وقد اااه [Accusé] ...وقد كانت اتهمت الج- قناة الجزيرة إسرائيل بهذه القصفات"
S12	"(1) [*Filled pause*] a tragedy [*Filled pause*]	"(1) اه فاجعة اه فاجعة أخرى في قطاع	"(1) Wael el-Dahdouh is a reporter for Al Jazeera [*Filled*	"(1)وائل الدحدوح مراسل الجزيرة اااه

	another tragedy in the Gaza strip the Zionist entity [*LongFilled pause*] a bombing of [*Filled pause*] a hospital [*Filled pause*] Al-Ali hospital and the initial statistics say that more than five five hundred people have been injured in this… (2) [*Filled pause*] the Zionist entity has denied [*LongFilled pause*] the Zionist entity has denied this news [*Filled pause*] and put the blame on the [*Filled pause*] on Hamas that it launched this rocket (3) Biden the American president was scheduled to meet [*Filled pause*] meet with with Mohamed Abbas the president of*[Self-interruption]*the current president of Palestine and with the president of[*Filled pause*] Jordan and Egypt".	غـزة الكيـان الصـهيوني اااه... قصـف اه مستشـــفى اه مستشـــفى العلـــي والإحصـائيات الأولى تقـول أن أكثـر مـن خمسـة خمسـمائة شـخص قـد أصـيب في هذه ال.. (2) اه نفـى الكيـان الصـهيوني اه.. اه نفى الكيان الصهيوني هذا الخبر اه وألقى اللوم على ال اه.. على حماس أنها هي من أطلقت هذا الصاروخ (3) كـان مـن المقـرر أن بايـدن الـرئيس الأمريكي يلتقي اه.. اه يلتقي مع مع مُحَمَّد عباس رئيس ال–الرئيس الحالي لفلسطين ومع رئيس ال اه الأردن ومصر"	*pause*]he has lost many members of his family in the Israeli attacks [*Filled pause*] he lost[*Filled pause*] his journalist son with other colleagues who [had died] in the Israeli attacks (2) according to the Palestinian newspaper Al-Wafaa [*Filled pause*] his car had been targeted while he was on his way to Khan Younes camp with his journalist colleagues and they are freelance journalists w[*silent pause*] working for[*silent pause*] for [journals] like *[Self-interruption]* [journals] like [*Filled pause*] Palestine Today and Al Jazeera (3) [*Filled pause*] this targeting has been condemned by [*Filled pause*] Al Jazeera newspaper and it accused Israel for deliberately targeted the journalists and pointed that[*Filled pause*] that it is and pointed that it is [*Filled pause*] a heinous act".	فقـد العديـد مـن أفـراد عائلتـه في الهجمـات الإسـرائيلية اه فقـد... اه ولده الصحفي مع زملائه آخرين الذين [ألقوا] حتفهم في الهجمات الإسرائيلية (2) حسب صحيفة الوفاء الفلسطينية اه قد تم استهداف سيارته وهو متجه نحـو مخـيم خـان يـونس مـع زملائـه الصـحفيين وهـم صـحفيين أحـرار ي.. يعملـون لـدى .. لـدى.. [صـحائف] مثـل– [صـحيفات] مثـل اه فلسـطين اليوم والجزيرة (3) اه قـد تم إدانـة هـذا الاسـتهداف مـن طـرف اه صـحيفة الجزيـرة واتهمـت إسـرائيل اه اتهمـت إسـرائيل أنهـا استهدفت عمـدا الصـحفيين وأشـارت على أنه اه على انه وأشارت على أنه اه فعل شنيع"
S13	"(1) [*Filled pause*] [*Long silent pause*] [Can't I repeat?] [*Expressed in colloquial Arabic*] [*Long filled pause*] he talks about the war between Israel and Gaza and [*Filled pause*] a hospital [Long *Filled pause*] where Israel hit Israel struck a hospital [I don't remember its name] [*Expressed in colloquial Arabic*] [*Filled pause*] and one hundred and five people were killed in this airstrike [I don't remember] [*Expressed in colloquial Arabic*] (2) [Long *Filled pause*] Israel accused the Gaza strip [*Filled pause*] of bombing [*Filled pause*] of this airstrike where it said that [*Filled pause*] that the [*silent pause*] the bombing came from [*Filled pause*]	"(1) اه... [وقفة طويلة] ....[ما نقدش نعاود؟]... اه ..... يتحدث عن الحرب بين إسرائيل وغزة و اه مستشفى ... اه .. أين ضربت إسرائيل قصفت إسرائيل مستشفى [مانيش عاقلة على اسمه] اه.. وراح ضحية هذا القصف مائة وخمسة [مانيش عاقلة] (2) اه.. اتهمت إسرائيل قطاع غزة اه بقصف اه بهذا القصف حيث أنها قالت اه.. أن ال.. القصف جاء من اه من طرف اه.... من طرفهم ...اه jesais [pasهذا ما عقلت] (3) ام.. جون بايدن كان.. اه سيلتقي كان سيلتقي مع الرئيس الفلسطيني اه لكن هذا ال .. لكن [وقفة طويلة]..."	"(1) [*Filled pause*] Wael el-Dahdouh [*Filled pause*] is a manager [*Filled pause*] at Al Jazeera office he has lost many members of his family and this Sunday he lost his son[*Filled pause*] Hamza Dahdouh in in an airstrike [*Filled pause*] where he was with with his friend and [*Filled pause*] others wounded (2) [*Filled pause*] he was [*Filled pause*] Hamza el-Dahdouh was by car [*Filled pause*]heading to[Long *Filled pause*]and[*Filled pause*] the Palestinian agency Al-Wafaa [*Filled pause*] claims that Israel is the one responsible for this airstrike? No [*Expressed in French*] (3) No, I am not able to concentrate [*Expressed in French*]".	(1) اه وائـل الدحـدوح اه مـدير اه في مكتب الجزيرة فقد عدة أفراد من عائلته و هذا الأحد فقد ابنه اه حمزة دحدوح ب بقصف اه أين كان مع مع صديقه و اه آخرين جرحى (2) اه كان اه حمزة الدحدوح بالسيارة اه ذاهبـا إلى.... اه.. واه وكالـة الوفـاء الفلسطينية اه اه تدعي أن إسرائيل هي المسؤولة عن هذا القصف؟ [non] .... [Non... Je (3) n'arrive pas à "concentrer]

	from [*Filled pause*] from them [*Filled pause*] [I don't know that's all I remember] [*Expressed in colloquial Arabic and French*] (3) [*Filled pause*] Jon Biden was [*Filled pause*] going to meet was going to meet with the Palestinian president [*Filled pause*] but this [*silent pause*] but [*Long silent pause*]".			
S14	"(1) [*Filled pause*] Israel had [*Filled pause*] hit [*Long pause*] airstrike? [*Expressed in English*] on the seventh of October Israel had [*Long filled pause*] [*unintelligible muttering*], I don't know the word [*Expressed in English*] *[Filled pause]* more than a hundred two hund*[Self-interruption]* a thousand were injured *[Filled pause]*and this was a reaction for Hamas's *[Filled pause] wh [Self-interruption]*where there were thirteen thousand injured? (2) *[Filled pause]*the strike was in*[Filled pause]*in a hospital in central Gaza, where more than five hundred thousand*[Filled pause]*were injured (3) and there were six *[Filled pause]*six *[Filled pause]*six people died in died in a hospital a hospital*[Filled pause]*an American school?"	"(1) اااه.. لقد قامت إسرائيل ب اه ضرب اه ب، ...[airstrike?] في السابع من أكتوبر قامت إسرائيل اه ب اه ب اه.....[تمتمة]... [I don't know the word]اه حيث آه كان هنالك أكثر من مئة مئتا- ألف جريح اه وهذا كان ردة فعل على ضربة حماس اه أين فق- أين كان هنالك ثلاثة عشر ألف جريح؟ (2) اااه كانت الضربة في اه في مستشفى في وسط غزة حيث كان هنالك أكثر من خمسمائة ألف اااه جريح اه خمسمائة ألف شخص داخل ال داخل هذا المستشفى (3) وكان هنالك ستة آه ستة اه أشخاص توفوا في توفوا في مستشفى مستشفى اااه مدرسة أمريكية؟"	"(1) [*Filled pause*] the journalist of Al Jazeera [*Filled pause*]says in the district of Gaza [*Filled pause*] the [*Filled pause*] journalist Wael Dahdouh has said goodbye to his family [*Filled pause*] and his son Hamza Dahdouh in [*Filled pause*] in atta*[Self-interruption]*in Israeli attacks by a drone with his friend the journalist (2) [*Filled pause*] in [*Filled pause*] the union [*Filled pause*] the union of journalists [*Filled pause*] both worked as [*Filled pause*]f-freelance journalists with Hamza Hamza Dahdouh too (3) [*Filled pause*] Wael Dahdouh is the chief [*Filled pause*] of Al Jazeera bureau in Gaza and he [*Filled pause*] he was seen by many viewers*[Self-interruption]*he caught their attention when he learned of his family's death in a live across social media where his wife[*Filled pause*] and grandson and son and daughter died".	"(1) اه يقول اه صحفي الجزيرة في مقاطعة غزة ااه قام ال صحفي وائل الدحدوح بتوديع عائلته اه وابنه حمزة دحدوح في اه في اه في هجوم- هجومات إسرائيلية في طائرة مسيرة مع صديقه الصحفي (2) اه في.. اه في اتحاد ال- في اتحاد الصحفيين اه كلاهما يعملان كصحفيين اه... ح-حرين اه مع حمزة الدحدوح- وكذلك حمزة الدحدوح (3) اه وائل الدحدوح هو رئيس اه مكتب الجزيرة في اه غزة وكان اه رآه العديد من المشاهدين- لفت انتباههم عندما علم بوفاة عائلته اه في في Liveعبر مواقع التواصل الاجتماعي حيث توفيت اه زوجته وحفيده وابنه وابنته"
S15	"(1) [Long *Filled pause*] this news spread worldwide Israel bombed [*Filled pause*] a hospital in Gaza and [*Filled pause*] this act was condemned [*Sigh*] [*Filled pause*] and [*Filled pause*] hundreds of Palestinians were killed [*Filled pause*] since the seventh of October [*silent pause*] and this is during	"(1) اااه... لقد انتشر هذا الخبر عالميا إسرائيل قامت بقصف اااه.. مستشفى في غزةا واااه تم إدانة هذا الفعل [تنهيدة].. اه وتم قتل اه المئات من الفلسطينيين اه منذ السابع من أكتوبر... وهذا أثناء النزاع بين حماس وإسرائيل أين اه.... أين تم قتل ثلاثمائة شخص (2) اه.. وتم استهداف المستشفى المعمداني أين ااه تم تأكيد خبر وفاة	"(1) [Taking notes] *[Filled pause]*a reporter *[Filled pause]* the reporter of Al Jazeera in Gaza Wael el-Dahdouh says goodbye to another member of his family *[Filled pause]* his son Hamza el-Dahdouh who was killed in Rafah city (2) [Taking notes] *[Filled pause]*and according to expert journalists in Gaza Wael el-	"(1) [أخذ نقاط] اه... مراسل اه مراسل الجزيرة في غزة وائل الدحدوح يودع فردا آخر من عائلته اه ابنه حمزة الدحدوح الذي اغتيل في مدينة رفح (2) [أخذ نقاط] ااه... وعن خبراء صحفي في غزة يعتبر وائل الدحدوح وابنه من مراسلي من مراسلي الصحافة الحرة [that's it] (3) [أخذ نقاط] اه وائل الدحدوح

	the conflict between Hamas and Israel where [*Filled pause*] where three hundred people were killed (2) [*Filled pause*] and the Baptist hospital was targeted where [*Filled pause*] the news of the death of five hundred people was confirmed [*Filled pause*] and despite thousands of people being amongst whom [*Filled pause*] [*unintelligible muttering*] patients [*silent pause*] and also those who took the hospital as a refuge during the Israeli bombing on Gaza (3) [*Filled pause*] today the news was confirmed that six people died in [*Filled pause*] a school of the the United Nations?".	خمسمائة شخص اه.. و على الرغم من وجود آلاف الأشخاص من بينهم.. اه [تمتمة] مرضى... وأيضا الذين اتخذوا المشفى كملجأ لهم أثناء القصف الإسرائيلي على غزة (3) اه أما اليوم فقد تم تأكيد خبر وفاة ست أشخاص في اه مدرسة ال الأمم المتحدة؟"	Dahdouh and his son are considered reporters of freelance reporters [that's it] (3) [Taking notes] *[Filled pause]*Wael el-Dahdouh who works in Al Jazeera news channel and *[Filled pause]* he is considered… a news manager he lately became known for *[Filled pause]*reporting on the news of the death of his family his wife and grandson and children".	الذي يعمل في قناة الجزيرة الإخبارية واه يعتبر... مديرا إخباريا أصبح معروفا مؤخرا اه ل نقله خبر وفاة عائلته زوجته وحفيده وأولاده "
S16	"(1) [*Filled pause*] a hit [*silent pause*] according to according to the local minister of Health [*Filled pause*] a hi*[Self-interruption]* according to the minister of Health [Well] [*Expressed in French*] according to the minister of Health [*Filled pause*] five five hundred [*Filled pause*] injured due to [*Filled pause*] due to a clash between the Israelis and the Palest*[Self-interruption]* [*Filled pause*] [Well] [*Expressed in French*] due to a clash between Hamas and the Israelis (2) Israel accused the Hamas that it was the cause for this [*silent pause*] the shot but the Palestinians deny that and that it was [*Filled pause*] false information (3) [*Filled pause*] the president of the United States of American [gave] a visit to Israel to meet with	"(1) اه ضرب... حسب حسب وزير الصحة المحلية اه ضر- حسب وزير الصحة [en fin] حسب وزير الصحة اه خمس خمسمائة اه جريح جراء اه جراء [تشابك] بين الإسرائيليين والفلسطيني- اه [en fin]جراء تشابك بين حماس والإسرائيليين (2) اتهمت إسرائيل ال حماس أنه كان سبب هذه ال.. الطلقة ولكن الفلسطينيين ينكرون ذلك وأنها كانت اه معلومة خاطئة (3) اه رئيس الولايات الأمريكية المتحدة قدم زيارة إلى إسرائيل كي يلتقي مع الرئيس الفلسطيني محمود عباس اه في اجتماع لأربعة مع جانبا إلى مصر والأردن"	"(1) Wael el-Dahdouh *[Filled pause]* is a reporter for Al Jazeera channel in Palestine he has lost many members of his family in *[Filled pause]*an Israeli airstrike and has lost his son and his journalist colleague Hamza in an Israeli airstrike this time (2) according to the Palestinian press Al Jazeera *[Filled pause]*his car was bom*[Self-interruption]*the car of the [journ] *[Self-interruption]*was bombed the journalists Hamza and his colleague by a [drone] or plane..while he was going arou*[Self-interruption]*around the city. (3) This blow was deadly *[Filled pause]*Al Jazeerafil*[Self-interruption]*filed a complaint at the United Nations that Israelis *[Filled pause]*that Israel targets journalists [commonly]".	"(1) وائل الدحدوح اه هو مراسل قناة الجزيرة في فلسطين لقد خسر العديد من أفراد عائلته في اه قصف إسرائيلي و كما خسر ابنه وزميله الصحفي حمزة في قصف إسرائيلي هذه المرة (2) حسب الصحافة الفلسطينية الجزيرة اه تم قصف سيا- تم قصف سيارة ال -Journaالصحفيين حمزة وزميله عن طريق [درون] أو طائرة.. بينما كان يتجول في في أنحا- في المدينة (3) كانت هذه الضربة قاتلة اه فقامت الجزيرة برف- بشكوى في الأمم المتحدة على أن الإسرائيليين اه على أن إسرائيل تهاجم الصحفيين بطريقة [متداولة]"

	the Palestinian president Mahmoud Abbas [*Filled pause*] in a meeting of four with alongside Egypt and Jordan".			

Abstract

This study investigates the impact of cognitive skill training on interpreter performance, focusing on active listening, working memory, and public speaking. Grounded in cognitive theories of interpreting, the research adopts a process-oriented approach to interpreter training. A quasi-experimental design was implemented at the Translation Institute of Oran, where a 7-week training module integrated targeted exercises to enhance cognitive skills. Pre-test and post-test assessments using consecutive interpreting tasks measured participants' performance, evaluated through a tailored assessment rubric. Statistical analyses revealed significant improvements, supported by qualitative feedback from a post-experiment questionnaire. Findings suggest that cognitive training enhances interpreters' retention, reformulation accuracy, and delivery fluency. The study underscores the pedagogical value of integrating cognitive skill-building exercises in interpreter education while acknowledging limitations related to sample size and participant variability.

Keywords: interpreter training, cognitive skills, active listening, working memory, public speaking, quasi-experiment.

الملخص

تهدف هذه الدراسة إلى تقصي أثر تدريب المهارات المعرفية على أداء الترجمان، مع التركيز على مهارات الاستماع الفعال، والذاكرة العاملة، والإلقاء. تستند الدراسة إلى النظريات المعرفية في الترجمة الفورية، مع اعتماد مقاربة قائمة على العمليات، حيث تم إجراء دراسة شبه تجريبية تمثّلت في تطبيق برنامج تدريبي تضمّن تمارين موجّهة لتنمية المهارات المعرفية، وذلك على مدى سبعة أسابيع بمعهد الترجمة بوهران .تم تقييم أداء المشاركين من خلال اختبارات قبلية وبعدية في الترجمة التتابعية، بالاستناد إلى شبكة تقييم أُعدّت خصيصًا لهذه الدراسة. كشفت نتائج التحليل الإحصائي عن تحسّن ملحوظ في مستوى الأداء، تدعمه المعطيات النوعية المستقاة من استجابات الطلبة في الاستبيان المقدّم بعد التجربة. وتشير النتائج إلى أن التدريب المعرفي يسهم في تعزيز القدرة على الاحتفاظ بالمعلومات، وتحسين دقة إعادة الصياغة وطلاقة الإلقاء. تخلص الدراسة إلى التأكيد على الأهمّية البيداغوجية لإدماج تمارين تنمية المهارات المعرفية ضمن برامج تكوين الترجمان، مع الإشارة إلى بعض القيود المرتبطة بحجم العينة وخصائصها.

الكلمات المفتاحية: تكوين الترجمان، المهارات المعرفية، الاستماع الفعال، الذاكرة العاملة، الإلقاء، دراسة شبه تجريبية.