

SAY IT AGAIN

International Workshop on Interpreting Technologies

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on Interpreting Technologies**

SAY IT AGAIN 2023

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Preface

The present volume comprises accepted contributions at *SAY IT AGAIN: International Workshop on Interpreting Technologies* (SAY IT AGAIN 2023), which took place at the University of Malaga (Spain), on the 2nd and 3rd of November 2023.

SAY IT AGAIN 2023 sought to act as a meeting point for researchers working in interpreting-related technologies (CAI tools, machine interpreting, speech to text/speech translation, remote interpreting, etc.); practicing tech-savvy interpreters; companies and freelancers providing services in interpreting as well as companies developing tools for interpreters. In addition to the short papers for presentation included in this volume, SAY IT AGAIN also invited talks by leading lights in the field, as well as hands-on seminars hosted by practitioners. Over 80 attendees from all around the world were present at SAY IT AGAIN 2023 workshop, which welcomed contributions authored by a total of 16 scholars. These figures account for the truly international nature of the event.

Regarding the keynote speeches, two were the main axes of debate. On the one hand, the interconnection of artificial intelligence and interpreting was thoroughly discussed by Prof. Dr. Enrique Alba Torres (University of Malaga), with “Artificial Intelligence and Multilingual Communication”; Ms. Dora Murgu (Global Head of Operations and Client Delivery at Interprefy), with “Innovations in Interpreting: Striking a Balance between Human Insight and AI”, and Prof. Dr. Jun Pan (Hong Kong Baptist University), with “Interpreting in the Age of Artificial Intelligence: From “Big” Interpreting Data to Innovative Digital Solutions”. On the other hand, further applications of the latest trends in technology to the field of interpreting were presented by Prof. Dr. Sabine Braun (Surrey Institute for People Centred Artificial Intelligence), in “Say it with technology? The evolving role of technology in human-centric interpreting workflows”; Prof. Dr. Fred Blain (Tilburg University), in “Interpreting from a Machine Translation point of view”, and Dr. Eva Leitner (CEO at MSS Language Solutions), in “Interpreting – new challenges and innovative solutions”.

In this line, while language technologies have already made a major impact on the core tasks in the translation profession, the field of interpreting has not yet witnessed a fundamental paradigm shift on account of their use. Against such a background, SAY IT AGAIN aimed at filling in this gap by allowing the discussion, the scientific comparison, and the mutual enrichment of researchers and professionals working with interpreting-related technologies. In this regard, SAY IT AGAIN addressed the development of interpreting-related tools, and the experience interpreters have with these tools as well as

the development of machine interpreting engines, incorporating (or not) human expertise. The workshop also offered a discussion forum and publishing opportunity for interpreters and for researchers and developers working on interpreting-related technology and machine interpreting. It also played a key role in fostering networking between all stakeholders. The main fruits of such a productive workshop are collected in the present volume.

Concerning the main themes covered throughout the volume, most contributions revolved around the notion of new technologies for interpreting trainees (papers by Prof. Dr. Ingrid Cáceres-Würsig, Mr. Darío Mantrana Gallego, and Prof. Dr. Raquel Lázaro Gutiérrez; Ms. Marta Alcaide-Martínez; Ms. Laura Noriega-Santiáñez, and Dr. Mahmoud Gaber), new technologies and specialised interpreting (Ms. Claudia Mejia de la Pava, Mr. Luis Carlos Marín Navarro, and Mr. Ran Yi) as well as artificial intelligence in interpreting (Prof. Dr. Luis Alonso Bacigalupe and Prof. Dr. Pablo Romero-Fresco, and Mr. Eloy Rodríguez González, Mr. Muhammad Ahmed Saeed, Dr. Tomasz Korybski, Prof. Dr. Elena Davitti and Prof. Dr. Sabine Braun)

We would like to thank all authors who sent their contributions to this volume, the reviewers for finding time to review the submissions and provide feedback, all participants for their stimulating discussions, as well as the organising committee for their invaluable support in order to guarantee that the whole workshop could run smoothly. We would also like to seize this opportunity and thank INCOMA Ltd. for making the publication of this volume possible. Finally, our deepest gratitude goes to our sponsors: University of Malaga (Vice-Chancery for Research), Research Institute of Multilingual Technologies (IUITLM), Lexytrad, Department of Translation and Interpreting (UMA), the Spanish Ministry of Science and Innovation (ref. PID2020-112818GB-I00, PDC2021-121220-I00) and the Andalusian Government (ref. ProyExcel_00540).

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Assessing the impact of automatic speech recognition on remote simultaneous interpreting performance using the NTR Model

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Abstract. The emergence of Simultaneous Interpreting Delivery Platforms (SIDPs) has opened up new opportunities for interpreters to provide cloud-based remote simultaneous interpreting (RSI) services. Similar to booth-based RSI, which has been shown to be more tiring than conventional simultaneous interpreting and more demanding in terms of information processing and mental modelling [11; 12], cloud-based RSI configurations are perceived as more stressful than conventional simultaneous interpreting and potentially detrimental to interpreting quality [2]. Computer-assisted interpreting (CAI) tools, including automatic speech recognition (ASR) [8], have been advocated as a means to support interpreters during cloud-based RSI assignments, but their effectiveness is underexplored. The study reported in this article experimentally investigated the impact of providing interpreters with access to an ASR-generated live transcript of the source speech while they were interpreting, examining its effect on their performance and overall user experience. As part of the experimental design, 16 professional conference interpreters performed a controlled interpreting test consisting of a warmup speech (not included in the analysis), and four speeches, i.e., two lexically dense speeches and two fast speeches, presented in two different interpreting conditions, i.e., with and without ASR support. This article presents initial quantitative findings from the analysis of the interpreters' performance, which was conducted using the NTR Model [17]. Overall, the findings reveal a reduction in the total number of interpreting errors in the ASR condition. However, this is accompanied by a loss in stylistic quality in the ASR condition.

Keywords: Remote Simultaneous Interpreting (RSI), Computer-Assisted Interpreting (CAI), Automatic Speech Recognition (ASR), NTR Model, interpreting quality.

1 Introduction

Remote simultaneous interpreting (RSI) has emerged as a prominent interpreting service delivery option resulting from the convergence of information and communication

technologies and simultaneous interpreting (SI) [1]. Initial RSI solutions were booth-based, i.e., involved interpreters working from conventional interpreting booths (with traditional interpreting consoles) connected to, but not located in, the event venue. In such configurations, while there is a certain degree of remoteness and alienation [13], interpreters remained within a familiar environment, sharing the same booths and workspace. Nonetheless, research on booth-based RSI has indicated that this modality of interpreting is more tiring and perceived as being more stressful than onsite simultaneous interpreting [11; 19]. It is reasonable to assume that these findings also apply to cloud-based RSI, where interpreters work with simultaneous interpreting delivery platforms (SIDPs) and are separated from their booth partners. A large-scale survey of conference interpreters, who at that time of responding primarily performed cloud-based RSI assignments, revealed that 83% of respondents found RSI more challenging than on-site interpreting, 50% believed their average performance was worse under RSI conditions, and 67% felt that working conditions are worse in RSI [2]. Against this backdrop, further research is imperative to explore how interpreters can be supported when working remotely, especially in cloud-based RSI assignments.

Building on the promising outcomes from studies that investigated the integration of ASR in traditional SI [3; 4; 6; 7; 8; 14; 15; 21], the integration of ASR in cloud-based RSI, which has already drawn the attention of the research community [9; 16; 17; 20], could yield similar positive effects and potentially enhance interpreters' performance and experience during cloud-based RSI assignments. This article presents initial quantitative findings derived from an experimental investigation that focused on the impact of providing professional conference interpreters with an ASR-generated live transcript of the source speech while interpreting, examining the effect on the interpretations' content and form. For further information on the secondary focus of the study, i.e., the user experience dimension, please refer to our previous publications [17; 20].

In contrast to most studies in the fields of ASR integration in traditional SI, which have been conducted with interpreting trainees [e.g., 6; 7; 14; 15; 21], the cohort of interpreters who took part in the present study are all professional conference interpreters. Moreover, instead of focusing the ASR support on specific entities such as numerals and/or terminology, which was the main approach taken by previous studies [e.g., 6; 7; 8; 9; 14; 15], the mock RSI interface designed for the present study displayed full ASR-generated live transcripts.

2 Methodology

The study reported here is part of a larger study which used a combination of quantitative and qualitative methods to investigate interpreting quality and user experience.

Participants in the study needed to be professional interpreters working from English into Spanish or French with a minimum of 400 hours of SI experience and at least 50 hours of RSI experience. We used a combination of purposive and snowball sampling to recruit participants, placing adverts on our social media channels as well as contacting professional interpreters in our networks directly. Our participant sample consisted of 16 professional conference interpreters, with the majority identifying as female

(N=11) and aged between 30- and 69-years old. At the time of the study, most participants (N=12) had accumulated over 1.200 hours of onsite simultaneous interpreting experience, two participants had between 800 and 1199 hours of experience and the remaining two had accumulated between 400 and 799 hours of work. As for training, ten participants held a postgraduate degree in conference interpreting, four had completed professional courses and two held undergraduate degrees.

Our study employed a two-by-two factorial design to measure the effect of two independent variables, namely source speech presentation (speech only; speech with the ASR-generated transcript) and type of source speech (lexically dense speech; fast speech – defined here as a delivery rate that is above 140 words per minute) on two dependent variables, namely quality of interpreting performance and user experience. The resultant four conditions—fast speech without ASR, fast speech with ASR, lexically dense speech without ASR, and lexically dense speech with ASR—were tested in a within-subject design, exposing each participant to all four conditions.

The experiment was conducted online using Qualtrics and Zoom and had an approximate duration of 40 minutes. It included the completion of a consent form, a pre-interpreting test questionnaire, the interpreting test and a post-test questionnaire. During the interpreting test, participants interpreted five speeches that were selected from a Plenary Session at the European Parliament on the topic of the European Green Deal, which was revealed to the participants right before the interpreting test, avoiding potential differences in the level of assignment preparation as a variable in the study. The first speech was excluded from the interpreting quality analysis as it served as a warm-up exercise for participants to acquaint themselves with the (non-interactive) mock interfaces used in the experiment (Fig. 1).

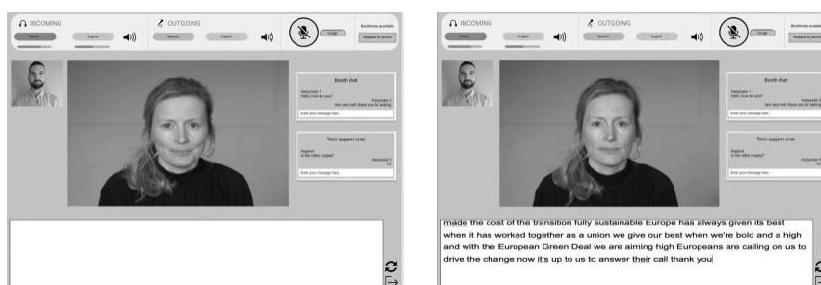


Fig. 1. Interfaces: without ASR (left) and with ASR (right).

The remaining four speeches each represented one of the four test conditions, with each speech being approximately five minutes long. The order in which the speech types (lexically dense speech [LD] and fast speech [F]) were presented was counterbalanced. However, the ASR condition consistently followed the non-ASR condition to prevent any potential confusion, leading to the following four sequences:

- Intro > LD1 > F1 > LD2 + ASR > F2 + ASR
- Intro > F1 > LD1 > F2 + ASR > LD2 + ASR
- Intro > LD2 > F2 > LD1 + ASR > F1+ASR

- Intro > F2 > LD2 > F1 + ASR > LD1 + ASR

Care was taken to ensure that the two speeches for each speech type (i.e., LD1/2 and F1/2) were highly similar not only in terms of topic but also in terms of problem triggers and pace. As a result, the speeches representing the same speech type were not treated as variables.

The interpreting performance was analysed using the NTR Model [18]. This model, which was originally devised to assess accuracy in subtitles produced through interlingual respeaking, was chosen as an experimental tool to assess the interpretations because its finely grained scoring system facilitated a consistent and rigorous quantification of the interpreters' output, allowing for a comparative analysis of interpreting performance across the four test conditions.

Although initially tailored to the context of interlingual live subtitle production [5], the NTR Model includes the notion of "translation errors", which render it suitable for the analysis of interpreting workflows [10] including the present study. It categorises errors into omissions (O), additions (A) and substitutions (S), which are content-related; and problems with grammatical correctness (C) and style (ST), which are form-related. To customise the NTR Model to the needs of the present study, the category of disfluencies (D) was added to capture disfluency issues in the spoken-language output produced by the interpreters.

Furthermore, the model allows for grading errors according to degree of severity, by assigning different penalty scores (deductions): minor (Min), major (Maj) and critical (Cri) errors incur deductions of 0.25, 0.5 and 1 points, respectively. Errors categorised as disfluencies in this study were normally penalised as minor style-related errors, recognising that they may vary across the four test conditions.

The total deduction points are then fed into the NTR formula (Fig. 2). Notably, the formula used in this study has been simplified to exclude recognition errors, which were originally present in the model for assessing interlingual respeaking. The result of the calculation provides the NTR score, where fewer and less severe errors lead to NTR scores approaching 100.

$$\text{NTR score: } [(\text{number of target words} - \text{deductions}) / \text{number of target words}] \times 100 = \%$$

Fig. 2. Adapted NTR formula.

The scoring sheets used for the interpreting performance analysis, which were inspired by the templates developed by Elena Davitti and Annalisa Sandrelli for interlingual subtitling [5], were adapted to incorporate the disfluency category.

3 Findings

This section presents initial results that were obtained through the NTR analysis, starting with the average NTR scores for each of the four test conditions (Table 1).

Table 1. Average NTR scores for both speech types with and without ASR.

	LD	F
Source speech without ASR	98.24%	97.93%
Source speech with ASR	98.92%	98.18%

In relation to this finding, it is important to note that while the differences between interpreting with and without ASR support might appear modest for both speech types, they still represent a substantial change, which becomes apparent when examining the deductions in the different test conditions. In the non-ASR conditions, the total is -167.5 for LD and -221.75 for F. In the presence of ASR, the deductions reduce noticeably by 63.75 points in LD + ASR and 43.5 points in F + ASR (Table 2).

Table 2. Total deductions for both speech types with and without ASR.

	LD	F
Source speech without ASR	-167.5	-221.75
Source speech with ASR	-103.75	-178.25

Apart from analysing the overall tendencies derived from the NTR scores and the overall deductions, it is also interesting to explore individual error categories, which represent the smallest data points within the NTR model. Table 3 gives an overview of the prevalence and distribution of errors across the four conditions investigated in the present study. This assessment reveals that, with the exception of style-related errors, there are fewer errors when ASR support is available (Table 3). Specifically, the combined error count for LD and F is 1031, whereas LD + ASR and F + ASR together tally 745 errors, which represents a notable 28% reduction in the error count.

Table 3. Error distribution in all four conditions.

	O	A	S	C	ST
LD	217	13	149	29	16
F	330	15	175	59	28
Total	547	28	324	88	44
LD + ASR	152	7	78	20	27
F + ASR	300	9	104	16	32
Total	452	16	182	36	59

The biggest reduction is observed in the number of correctness-related errors in F + ASR (16), demonstrating a remarkable 72% reduction compared to F (59). This is followed by substitutions and additions in LD + ASR, which show a 47% and a 46%

reduction, respectively, compared to LD. By contrast, style-related errors are more prevalent in the presence of ASR, with an increase of almost 69% in LD + ASR and 14% in F + ASR. Overall, with the exception of the style category, there is a reduction in errors from non-ASR to ASR in each error category and speech type.

4 Discussion

In our data, the integration of ASR in RSI entails an overall reduction in the number of interpreting errors and deductions, which is ultimately reflected in the average NTR scores. However, the degree of reduction in error occurrences and deduction varies slightly between the investigated speech types. Interestingly, fast speeches do not appear to have benefitted as much as lexically dense speeches from the application of ASR, although the transcriptions were timely and accurate. This suggests that the characteristics of the speech being interpreted may play a role in how interpreters are able to integrate the ASR-generated transcripts in the interpreting process and potentially derive benefits from them.

Regarding the four average NTR scores obtained in this study, it should be noted that, unlike in interlingual respelling, where a quality benchmark of 98% has been suggested [5], there is no established benchmark for NTR scores used for SI performance evaluation. However, in a study that compared the accuracy of the output produced by EU-accredited interpreters with that of a semi-automated workflow combining intralingual respelling and machine translation, Korybski et al. [10] found that all interpreters scored above 98%. Considering this, it could be argued that, in the case of fast speeches, the presence of the ASR elevated the average interpreting performance from what could be considered an acceptable level to "best-in-class" standards.

Another point that emerges from the results is that the total number of errors and its correspondent deduction scores drop across all speech types as interpreters move from the non-ASR to the ASR-aided condition. This suggests that the presence of ASR potentially assists interpreters in delivering more accurate and complete renditions. This could be particularly beneficial in technical and detail-oriented assignments.

However, the increase in the number of style-related errors, which can affect the reception of the interpretations, raises a critical question regarding the balance between interpretations that are more accurate and complete, and the stylistic quality of their delivery.

As a possible explanation of the mixed results, it is worth noting that, while participants were informed about what to expect during the experiment and the interpreting test, they did not undergo any training prior to the experiment, which might have impacted on the management of disfluency issues.

Furthermore, the decline in stylistic quality could be attributed to the way the ASR transcriptions were displayed or to the fact that the full source speech was transcribed, as opposed to selected items. This approach might have challenged the usability of the transcriptions further by increasing an already substantial cognitive load.

5 Conclusion

In conclusion, given the many challenges that arise in cloud-based RSI, the main aim of the present study is to investigate the extent to which the integration of ASR in SIDPs can support remote interpreters. This article has presented initial findings from an NTR analysis of interpretations collected as part of an experimental study involving professional interpreters and has offered explanations for these findings. Overall, the investigated interpreting workflows demonstrate a trend towards reduced errors, both in quantity and quality, when the interpreters had access to the ASR-generated transcriptions of the source speeches. However, the presence of ASR also led to a notable increase in the number of style-related issues, which could have a potential negative impact on how interpretations are received. This emphasizes the need for further research aimed at optimising the usability of the ASR-generated transcripts and enhancing the effectiveness of ASR support, reducing its invasiveness and creating a better RSI experience for interpreters and their audience.

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The application of artificial intelligence-based tools to intralingual respeaking: The NER Buddy

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Abstract. This paper explores the application of artificial intelligence to the assessment of live intralingual subtitles. Following an initial introduction on the current role of artificial intelligence-based technology on language processing, the main features and workflows involved in live subtitling are discussed. A new application called NER Buddy is then presented, along with an analysis of its initial performance in the (semi) automatic assessment of live subtitles.

Keywords: Artificial intelligence, Live subtitling, Quality assessment.

1 Artificial intelligence and language processing

The landscape of translation, interpreting and accessibility services is in a constant state of flux, driven by technological breakthroughs. Perhaps the most remarkable of these changes is the recent introduction of artificial intelligence (AI) tools for language processing. ChatGPT is probably the most popular of those AI-based tools and can be described as a Chabot that interacts with humans in conversations, therefore, answering questions in a chat format. Chat GPT has been trained on a Large Language Model (LLM), a probabilistic model of natural language sequences. AI-based LMs are thus built on the principle of anticipation of relationships between text elements. They take an input text and predict the next word (or token), very much in tune with the basic principles of interpretation theory, where anticipation of information is a basic rule of thumb for conference interpreters (Setton 1999).

LLMs are fed with trillions of tokens during training. The fine-tuning of the model (the process where the massive general information fed into the system is complemented with more specific information about the task at hand) was until recently the only way a model could be adapted for specific tasks. However, now LLMs can perform tasks on their own through so-called prompt engineering, which is the process of providing text that can be understood by a generative AI model. Prompts are just pieces of texts in natural language (or lists of instructions) which describe the task that an AI application should perform to achieve similar results. This paper will focus on the application of this type of technology to assessment of live subtitling quality.

2 Intralingual Live Subtitling

Intralingual Live Subtitling (ILS) is an accessibility service where live subtitles (or captions, in the US terminology) in the same language as the audio are shown on the screen for people with hearing loss and for the wider hearing audience who wishes to use them. Live captions are becoming increasingly popular these days. Although it is estimated that in the US 14% of Americans have a hearing loss (HLAA 2018), subtitles for the deaf and hard of hearing are used regularly by 50% of Americans, which increases to 70% in the case of members of Generation Z (Mykhalevych, 2022).

ILS can be produced through different workflows. Live subtitles initially broadcast in the UK and the US in the early 1980s were produced using keyboards, either standard QWERTY keyboards, dual keyboards (with a team of two live subtitlers working on the same programme), or especial keyboards such as the Velotype (Romero-Fresco and Eugeni, 2020), which allows the user to press several keys simultaneously, and produces syllables rather than letters. This method was soon replaced by stenography, where the subtitler can press multiple keys at the same time to spell out not only whole syllables and words, but also phrases, with a single hand motion and much faster than with the Velotype. Stenography, however, is a complex and expensive technique that requires extensive training (between three and four years), more than the time required to operate the Velotype.

In the early 2010s a new method known as respeaking was introduced as an alternative to the previous workflows. In intralingual respeaking “a respeaker listens to the original sound of a (live) programme or event and respeaks it, including punctuation marks and some specific features for the deaf and hard-of-hearing audience, to a speech recognition software, which turns the recognized utterances into subtitles displayed on the screen with the shortest possible delay” (Romero-Fresco 2011: 1). Respeaking has now become the most popular live subtitling method all over the world. However, the development of automatic speech recognition software (ASR) and the introduction of new advances in AI have brought about a new method that is gradually gaining ground: fully automatic live subtitling, which transcribes the original speech and identifies different speakers without the need for any human intervention. Given that the introduction of this live subtitling method in online meeting platforms has increased exponentially after the 2020 worldwide pandemic, broadcasters and companies all over the world are beginning to combine human and fully automatic live subtitling, especially because that the latter is considerably more affordable than the former.

As the aim of live subtitling is to provide accessibility for the users, some of whom (mostly those with hearing loss) would not otherwise be able to access the audiovisual content, comparative research on the quality of these different methods is crucial.

3 Intralingual Subtitling Assessment: WER and NER

The WER model was designed to test subtitle quality. In this Model, N is the total number of words and there are three different types of errors: Substitution (a correct

word is replaced by an incorrect one), Insertion (an extra word is added) and Deletion (a correct word is omitted) (Dumouchel et al. 2011).

$$\text{WER} = \frac{S + D + I}{N} \times 100$$

$$\text{Accuracy} = 100 - \text{WER}$$

Figure 1. The WER model to assess the accuracy of live subtitles

The problem with this model is that it does not account for instances in which a subtitler edits the original text without necessarily changing or losing meaning. As is the case with translation, live subtitling is not about thoughtlessly reproducing each and every word of the original, but about conveying the intended meaning of the message. This could well be illustrated by instances where the subtitles omit unimportant asides or fillers from the transcript (*you know, I mean, kind of, um*), which is a useful strategy commonly applied by subtitlers (as well as conference interpreters) to keep up with the speech rate of the original speaker, but also to avoid unnecessary “noise” in the subtitles that may hamper efficient communication, very much in line with the principles of simultaneous interpreting.

The NER model was introduced by Romero-Fresco (2011) and developed further in Romero-Fresco and Martínez (2015) to fill the conceptual gaps of WER when applied from the standpoint of communication theory. The model is based on the basic principles of WER calculations but it accounts for different types of errors: E stands for edition errors, those stemming from strategies applied by the subtitler (omissions, for example), whereas R stands for recognition errors and refers to cases of misrecognitions. NER also grades the severity of the errors, which may also be classified as serious, standard or minor, scoring 1, 0.5 and 0.25, respectively. CE are correct editions, which are instances in which the subtitler’s editing has not led to a loss of information, and therefore are not graded as errors. In NER, a 98% efficiency is required as the minimum quality threshold required.

$$\text{Accuracy} = \frac{N - E - R}{N} \times 100$$

CE (correct editions):

Assessment:

Figure 2. The NER model to assess the accuracy of live subtitles

The NER model has gradually become the standard for live subtitling quality assessment around the world. However, it is not without problems. In order to focus on meaning rather than words and to account for how different types of errors impact on comprehension, it requires a human evaluator to compare the transcripts of the speech and the subtitles, which means that the model is both time-consuming and subject to some degree of subjectivity. In contrast, WER is fully automatic, as it relies exclusively on

word count, but it is also inaccurate, as seen above. The software presented in the next section is an attempt to (partially) solve the issue of achieving maximum levels of accuracy while at the same time providing an automatic assessment tool to save much-needed time.

4 NER Buddy

4.1. Description

NER Buddy is an AI-based application for the computer-assisted, fully automatic and semiautomatic assessment of intralingual subtitles developed in 2023 by members of the GALMA research group within the more general framework of the Spanish Ministry of Education-funded QUALISUB (The Quality of Live Subtitles) project <https://qualisub.webs.uvigo.es/inicio/>. The principles underlying the NER Buddy philosophy include three major aspects: usability, varied degrees of human-machine interaction and maximum accuracy.

4.2. Usability

User-friendliness was a major priority, as the large Excel worksheets used for NER analyses by human evaluators were difficult to handle, fuzzy and unclear. Usability was achieved thanks to the clarity and simplicity of the layout, which is, first of all, straightforward, devoid of unnecessary elements, with just two columns of text to host the transcript (or reference text) and the subtitles with their corresponding time marks.

4.3. Degrees of human-machine interaction

Assessment with NER Buddy can be machine-aided, semiautomatic and fully-automatic. In the machine-aided or computer-aided mode, human assessors provide an assessment of each idea unit, pinpointing and highlighting errors, just like with the old Excel Spreadsheets, but enjoying the benefits of a more usable format. In this mode, there is no participation whatsoever of AI. In the semiautomatic mode, Buddy can be asked to first identify and then grade the severity of the errors according to the NER formula. Both reference text and subtitles will be consigned to ChatGPT for an automatic online AI-based evaluation of the captions. Prior to this, however, extensive specific training of GPT developed by GALMA members was required in order to adjust the language model to the specific features, requirements and needs of the NER methodology. Then, Buddy's judgements can be checked against human judgement: in order to facilitate potential corrections stemming from human supervision to Buddy's automatic assessment tool, the severity of these errors (and the errors themselves, automatically identified by the system) can be changed manually.

The fully automatic assessment mode, in turn, includes the same methodology and tools as the previous semiautomatic mode, save for the fact that no human supervision is provided in this mode at the end of the process.

In all three modes errors will be highlighted (either automatically or manually) in different colours according to their severity (minor, standard and serious). The system will also work out the corresponding figures according to NER and will provide a NER success rate, which should be above the 98% threshold for the captions to be deemed accessible. The development of these three modes of analysis responds to two factors: (1) the current limitations of AI-based systems for language processing, and (2) the high levels of variability in the quality and exhaustiveness of the captions themselves. On the one hand, although developments in the area are fast, and swift progress will certainly follow in the future, at this point in time it seems that systems for such complex things as language processing still require some kind of human monitoring and control, as errors (sometimes blatant errors) are still being found in our analyses. On the other, and as explained above, different captioning workflows are being used by the industry, some based on verbatim transcription (produced through ASR) and others including a fair amount of editing (respoken or steno typed subtitles, for example). This means that different strategies -suited to the type of subtitles- need to be applied to achieve a fair evaluation of the captions, as will be discussed in the final section of this manuscript.

4.4. Accuracy

The process of achieving levels of accuracy with Buddy's semiautomatic and automatic mode that are comparable to human assessment is the most challenging part of the process. As said above, LLMs are trained with significant amounts of information, some of which may be relevant for many different types of activities, and can then be adapted for specific tasks. Later on, humans can engage in a conversation with ChatGPT or provide simple instructions to the machine through the use of prompts (sets of instructions) to guide the machine in a specific task. It has been observed that a large variability of results can be found even when minor changes are introduced in the conversation and/or instructions. It is, then, crucial to test different formulations and organizational structures of the questions themselves, as crucial and unpredictable answers (unpredictability may be one of the greatest hurdles of AI) may stem from such variations.

4.5. Results

The accuracy of NER Buddy was tested by comparing the results of its assessment with human assessment carried out by GALMA group members, who are experts in the evaluation of live captions. In the initial tests (using real-life speeches EN-EN), the NER scores yielded by Buddy were 2%-3% lower than those of human evaluators, which was considered promising, but still insufficient.

A second round of tests was carried out with real materials taken from different TV genres ES-ES. The results indicated that Buddy's efficiency was not as high as in the previous tests. Apparently, the automatic system was identifying more differences between reference text and subtitles than the human assessor. The conclusion was that

such low level of efficiency may not be exclusively the result of changes in the materials used in the analysis, but the consequence of using human subtitles produced by professional respeakers or stenographers in Spanish, which normally include a great deal of editing, with a word reduction rate of approximately 40%. In other words, the subtitles omit 40% of what is said the original audio. Buddy was identifying those omissions as errors, even though sometimes the omission of words does not involve the loss of meaning.

Therefore, a third pilot test was run using subtitles produced by ASR, i.e. nearly verbatim subtitles. The results turned out to be all the more encouraging: although only three tests were done with three short 5-minute samples, the automatic NER rate reached a high 96.89% in one of the samples, which although still falls too short of the NER threshold, is a step closer to the levels of accuracy reached by human evaluation of a similar sample (99.44%) and with Buddy's first round of tests. It is important to note that the number of errors found by Buddy was 92, whereas the human evaluator identified 32 errors. This shows the capacity of automatic systems to perform with maximum efficiency, but also of the lack of flexibility of those systems to be able to make human-like decisions, one of their principal limitations. It is our expectation that, by improving our prompts and with enhancements in ASR technology, these results will only get better in the short run.

To conclude, the crucial differences in the accuracy analysis between respoken subtitles and verbatim captions appear to indicate that automatic systems such as Buddy perform better with the latter than with the former. Respoken subtitles feature marked differences with respect to the formulation of the reference text, removing, for example, unnecessary words, such as synonyms, avoiding fillers, deleting unnecessary redundant information, etc., therefore providing an excellent summary of the contents of the reference text (very much in line with the work of simultaneous interpreters), but with substantial differences in formulation. Many of these differences are considered as errors by Buddy. This has driven the GALMA team to stretch the boundaries of this research towards the new endeavour of refining Buddy's skills and capabilities to an scenario where specific features and functions will be developed to suit the efficient analysis of respoken subtitles as something different from the analysis of verbatim subtitles.

5 Final thoughts

AI-based systems for language processing are becoming increasingly popular these days and are being applied to numerous domains, such as audiovisual translation, interpreting and accessibility. The different breakthroughs stemming from the introduction of communication and information technologies are transforming the landscape of traditional language services and pulling down old-established barriers between modes and genres, giving way to hybrid modes of translation, interpretation and accessibility services, where, among other things, machines are supporting -sometimes even replacing- humans in certain cumbersome, time-consuming activities that demand large amounts of human effort. The potential impact of automatic systems on the provision

of language services is, thus, inevitable, just as any other changes to human life brought about by technology. Automatisation can therefore be seen either as a threat or as an opportunity. It may look like a threat if we look exclusively at its impact in terms of immediate consequences for employment. However, it can also be seen as an opportunity if, for instance in the area discussed in this paper, we take into consideration that a fair reduction in costs may encourage TV broadcasters to do more NER tests.

Be it as it may, what is clear is that technology is an instrument at the service of humankind, whose purpose is to make our life easier. The research and the app. presented here intend to be a small contribution to that end. The crucial differences in the quality assessment of respoken subtitles and verbatim captions appear to indicate that automatic systems such as Buddy perform better with verbatim subtitles, which feature few discrepancies with the original speech, than with respoken captions, where respeakers tend to produce target texts with marked differences in their delivery with respect to the formulation of the reference text. This has driven the GALMA team to stretch the boundaries of this research towards the new endeavour of refining Buddy's skills and capabilities to an scenario where specific features and functions will be developed to suit the efficient analysis of respoken subtitles as something different from the analysis of verbatim subtitles.

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ChatGPT as a tool to generate multilingual and multimodal glossaries as training materials for consecutive and bilateral interpreting

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Abstract. The popularisation of AI with platforms such as ChatGPT allows for the creative elaboration of training materials for various disciplines. In this contribution we approach the use of ChatGPT in the development of multilingual and multimodal glossaries for the consecutive and bilateral interpreting classroom in a MA in business-oriented conference interpreting. We describe the prompting work leading to the effective creation of the glossaries in Excel format and discuss their reusability and interoperability with other applications, such as BoothMate. Several issues appear regarding formatting, like the compatibility of ChatGPT output with Excel, and concerning multimodality, in particular, the embedding, importation and exportation of audio and image files, are considered to offer examples of best practice and inspiration in the creation of training materials for interpreters. Multimodality presents a notable challenge for reusability and interoperability, which software developers should duly address. On the other hand, ChatGPT is proven useful for solving technical problems and speeding the generation of valuable training materials.

Keywords: Multilingual and multimodal glossaries, ChatGPT, Interoperability.

1 Introduction

The field of interpreting is currently facing a new paradigm known as “augmented interpreting”, wherein interpreters’ capabilities are strengthened and extended through the integration of new technologies. As several scholars recall (Fantinuoli & Dastyar 2022; Corpas & Hidalgo-Terner 2023; Prandi 2020), digitisation has arrived later in interpretation than in other professions, due to its character as an eminently cognitive activity. Over the past two decades, this field has witnessed a myriad of technological advancements that have piqued the interest of both academics and practitioners, leading to a substantial body of research and a multitude of video tutorials and webinars focusing on technology utilization. This was the case of terminology repositories and speech

banks (cf. Corpas 2018), devices for improved note-taking such as the tablet or the smart pen (Drechsel & Goldsmith 2016; Orlando 2010), headsets that provide better listening and, since the pandemic, videoconferencing platforms for remote interpreting. Until now, interpreting has not reached the level of automation that we have seen in translation (Stengers, Lázaro Gutiérrez and Kerremans 2023). However, automated interpreting and speech-to-text software are already being developed and are substantially changing the interpreting activity (Braun 2019). To this, the recent irruption of AI must be added, taking place on a massive scale, and changing the way society works.

1.1 The use of ChatGPT in the development of educational materials

Educational realms are experiencing one of the most profound impacts of generative AI. Open AI, a free and open access interface, is “capable of answering questions formulated in natural language on any subject” (López, Rodríguez and Montes 2023: 2). It does so with algorithms and models that emulate and automate the cognitive functions of human beings. Open AI has created the ChatGPT (Generative Pretrained Transformer) platform, which uses patterns found in large databases. From these interactions, it can create responses to user queries. As users pose questions, ChatGPT trains itself and improves its ability to encode natural into mathematical language, making the patterns more precise and complex. It’s essential to bear in mind that ChatGPT derives its knowledge from extensive databases, which can lead to potential inaccuracies or biases in responses. Therefore, users should approach the answers critically to identify any errors.

To obtain a good performance in the use of this AI tool, it is very important to make specific prompts. According to the López, Rodríguez and Montes (2023: 5) the perfect prompt should contain the following elements:

[context] + [specific information] + [proposal] + [format of the answer]
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In the context section, it is important to include information about the recipient’s professional background, age, and gender. The question itself should be formulated with precision, free from spelling errors, and accompanied by appropriate punctuation. Furthermore, it’s crucial to specify how the answer should be presented, whether in the form of a list, table, word count, language, etc. In the educational world, prompts are already being developed for active methodologies such as the case method, group work and laboratory practice. They are also used for assessment tasks through the application of rubrics and questionnaires.

With these premises in mind, we have developed and tested prompts to design training activities for consecutive and bilateral interpreting for students of the MA in Business-Oriented Conference Interpreting at the University of Alcalá (Madrid, Spain). This is an official postgraduate programme of 60 ECTS credits taught in the English-Spanish and Chinese-Spanish language combinations, which aims to prepare future interpreters for mainly, but not exclusively, the private sector. The tests with ChatGPT have been carried out in three subjects. The first subject serves as a theoretical foundation, provid-

ing students with essential knowledge in the field of professional interpreting. To facilitate a more cohesive and comprehensive learning experience, the practical activities are integrated and expanded upon in the practical modules offered for both language combinations. For the English group, this applies to “Note-taking and resources for interpreting”, and for the Chinese group, to a non-compulsory subject of “Consecutive and bilateral interpreting”.

We have focused on the methodologies we have found most suitable for our context, such as role-plays for bilateral interpreting, the creation of collaborative multilingual glossaries for the preparation of assignments and the development of speeches for the assessment of consecutive interpreting. In this contribution, we focus on the elaboration of multilingual and multimodal glossaries.

2 Using prompts for the generation of multilingual and multimodal glossaries as training materials

Creating glossaries is essential for interpreter preparation and ChatGPT provides a swiftly compilation of them. It offers the additional functionality of *exporting* (pasting) glossaries into Excel, where the user can include audio (such as pronunciation) and images for note taking. By dumping the glossary to other tools like BoothMate (the new app of the former Interpreters’ Help), collaborative work becomes possible, enabling students and/or professional interpreters to collectively enhance their resources and work more efficiently.

Within the introductory theoretical subject, common to both language combinations, we decided to adopt a multilingual approach encompassing Spanish, English, and Chinese languages to create a glossary. The initial phase of this process entails the careful design and delineation of the linguistic elements that will conform the multilingual glossary. Instead of providing terms for translation, we opted for entrusting ChatGPT with the whole task of creating the glossary from scratch, with a prompt that contained our linguistic criteria for terminology and precise parameters for formatting requirements. Articulating the prompt with clarity allows for obtaining a multilingual glossary that aligns seamlessly with our specific needs.

As a noteworthy example (see Fig. 1), which shows how ChatGPT presented the glossary in a list format rather than the preferred tabular format. The execution of this task by the AI is not flawed; rather, any perceived shortcomings may be attributed to the absence of contextual information and specific instructions. Here we failed to specify our preference for generating a glossary in an Excel format. To obtain the desired result, it is important to expressly specify the preference for a table layout when engaging ChatGPT in the glossary creation process.



Fig. 1. List of glossary terms provided by ChatGPT.

Our request to ChatGPT regarding the glossary encompassed more specific actions: we asked it to insert four additional columns within the table, denoted as ES Pronunciation, EN Pronunciation, ZH Pronunciation and Symbol-Notes, with the specific rule that these columns must remain without content. Secondly, to avoid redundancy, we requested the removal of the column labelled “term” from the table, as it duplicated the information already present in the “English” column. Additionally, it was necessary to effect modifications to the table's headers, including the omission of the term “translation” from the language-specific columns.

Spanish	English	Chinese	ES Pronunciation	EN Pronunciation	ZH Pronunciation	Symbol-Notes
Producto Interno Bruto (PIB)	Gross Domestic Product (GDP)	国内生产总值 (Guónèi Shēngchǎn Zǒngzhí)				
Crecimiento Económico	Economic Growth	经济增长 (Jīngjì Zēngzhǎng)				
PIB per Cápita	Per Capita GDP	人均国内生产总值 (Rénjūn Guónèi Shēngchǎn Zǒngzhí)				
PIB Nominal	Nominal GDP	名义国内生产总值 (Míngyì Guónèi Shēngchǎn Zǒngzhí)				

Fig. 2. Extract from the glossary provided with all our requirements.

Upon thorough verification of the terms and their corresponding translations (with ChatGPT’s assistance), we successfully developed a valuable resource. If needed, our

multilingual glossary could always be enriched with more terms and/or columns (such as definition, context, or example sentences), just by asking ChatGPT.

2.1 Embedded files: audio and image

Building a multilingual glossary with ChatGPT can indeed prove to be an efficient and effective undertaking when appropriately harnessed. In our experiment, we wanted to go a step beyond and include in our multilingual glossary information about the pronunciation of terms and symbols for note taking, which involved a multimodal approach including audio and image.

The design of Excel only allows to introduce numerical and textual data. However, the inclusion of audio and image is possible by embedding files. With this in mind, we proceeded to prompt ChatGPT to develop an Excel macro aimed at automating the integration of audio links within the Excel spreadsheet. Following ChatGPT instructions, we uploaded the audio files with the pronunciation of terms to a cloud platform (OneDrive). The macro would embed hyperlinks in Excel cells to enable glossary users to launch a web browser tab to play the audio file by clicking on the cell. Likewise, we created a macro which serves the purpose of seamlessly embedding images into Excel cells.

	A	B	C	D	E	F	G
1	Spanish	English	Chinese	ES Pronunciation	EN Pronunciation	ZH Pronunciation	Symbol-Notes
	Producto Interno Bruto (PIB)	Gross Domestic Product (GDP)	国内生产总值 (Guó nèi Shēng chǎn Zǒng zhí)	PIB	GDP	Guó nèi Shēng chǎn Zǒng zhí	
2	Créditos		经济增长 (jīng jì zēng zhǎng)				

Fig. 3. Successful audio and image embeddings.

A notable advantage of using ChatGPT for macro development is its ability to reduce the necessity for in-depth proficiency in Excel's programming language, VBA (Visual Basic for Applications). Furthermore, when complications arose during macro creation, we reported them to ChatGPT, which subsequently generated debugged codes to resolve the issue. This approach significantly simplifies both the troubleshooting process and the building glossary process.

The content for the pronunciation cells was also provided by ChatGPT, which offered us a useful webpage (<https://forvo.com/>) to gather the data we needed. We also prompted it to obtain symbols for note taking in consecutive interpreting. However, although ChatGPT did offer a set of symbols, they were not suitable for interpreters, as they were not easy to reproduce. We then opted for using one of our already-known sources for symbols, <https://www.symbolovnik.cz/en>, and our own expertise to create image files to be later embedded in our Excel.

1. Economy: 🌐
2. Output: 🏭
3. Consumption: 🛒
4. Investment: 🏠

5.	Government Spending:
6.	Exports: 🚚➡️
7.	Imports: 🚚⬅️

Fig. 4. Symbols suggested by ChatGPT.

Our experiment shows the possibility of creating multilingual and multimodal glossaries with the help of ChatGPT, which contributes providing content, instructions for data management and formatting, and lots of inspiration. Moreover, as previously stated, importing our Excel glossary into specialised interpreter tools like BoothMate would facilitate the task of building of a collaborative glossary, wherein colleagues can actively contribute their terms, resulting in the creation of a highly valuable resource. The process entails pasting the glossary generated by ChatGPT into an Excel file and subsequently importing it into BoothMate. This tool ensures trouble-free audio and image uploads, thereby avoiding time-consuming coding or macro creations when embedding files.

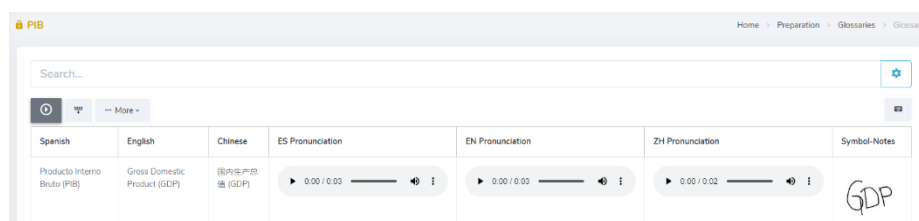


Fig. 5. Glossary on BoothMate.

3 Conclusions

The multiple challenges that we faced when communicating with ChatGPT highlighted the importance of crafting precise and context-aware prompts. After formulating detailed inquiries, such as specifying the desired table format and content, ChatGPT provided more accurate responses. It was also useful offering technical support to develop Excel macros for the management of glossaries enriched with audio and images.

Apart from obtaining useful output from ChatGPT, format and the possibility of re-usability and interoperability are some of our greatest concerns. This does not go without difficulties. In our first attempts, although the output was an Excel table, it was in plain text with pipe delimiters. We addressed this issue by employing Excel's "Text to Columns" functionality, but this required extra effort and knowledge about Excel. To streamline the process and eliminate the need for additional steps, the easiest and most direct approach is to request ChatGPT to generate a glossary already formatted with the desired number of columns. This way, the output can be effortlessly copied and pasted into Excel, maintaining the column structure as intended, without the necessity for further adjustments or manual formatting.

In fact, using Excel allows for importing glossaries to other applications, such as BoothMate. Its interface presents a user-friendly environment for the swift and uncomplicated importation of glossaries. To ensure an easy import, the glossary that must be

created within BoothMate must align with the structure of the Excel file, avoiding the risk of import errors in numerical and textual data. Multimodality, however, is still an issue, and BoothMate does not import embedded audio and image files. This input can be manually added, but, when attempting to export a BoothMate glossary to Excel, the audio and image columns with content uploaded to the platform will not appear in the exported Excel file.

In conclusion, both the creation of glossaries in Excel with the help of ChatGPT and within BoothMate entail some degree of customisation by the interpreter to align with specific interpreting needs and requirements for reusability and interoperability. ChatGPT helps both offering content and inspiration and solving format issues, and BoothMate constitutes an intuitive platform for sharing resources. Multimodality remains an obstacle in reusability and interoperability of resources, and, in our opinion, this should be the focus for further technological developments.

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ChatGPT: The future silver bullet for interpreters?

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Abstract. Our society is steadily advancing towards the digitalization and mechanization of processes. This paradigm shift is shaping traditional professions, giving rise to new occupational fields. In the culture of the digital age, interpreters must keep abreast of the latest technological tools to capitalize on their manifold perks. This paper seeks to provide a concise analysis of the potential of ChatGPT as an artificial intelligence chatbot application, especially during the professional and trainee interpreters preparatory stage prior to an assignment. Given this objective, a mock interpreter preparatory phase was conducted. This mock exercise was carried out following a three-step protocolized methodology: (1) three specific prompts were tailored for the purpose of interpreter documentation and preparation; (2) the three predefined prompts were formulated within ChatGPT (GPT-3.5 version); and (3) the responses generated by ChatGPT were evaluated according to three criteria. To the best of our knowledge, this is one of the first research on the effectiveness of ChatGPT as a source tool for interpreters' documentation at the preparation stage.

Keywords: ChatGPT, Prompts, Professional interpreters, Trainee interpreters, Preparatory phase.

1 Introduction

The unparalleled growth of artificial intelligence (AI) and AI-based technology tools is inevitably having a direct impact on current workflows. AI technologies enable humans to access information faster, obtain specific content, generate new ideas, or automate mechanical tasks, to name but a few. Against this backdrop, it is imperative for the education and business systems to seamlessly integrate these tools in a way that effectively fulfills the requirements of contemporary society (Schön *et al.*, 2023). In the case of interpreting, new technologies are also reshaping the interpreters' work environment. However, technological advancements in interpreting have had a minor impact when contrasted with the progresses in the domain of translation and other language-related careers (Fantinuoli, 2018).

According to this author, interpreters have experienced two great waves of breakthroughs that initially disestablished the profession. The first wave was triggered by wired voice transmission systems, particularly resulting in an increase in simultaneous interpreting. The second wave came with the advent of the Internet. A third wave was anticipated by Fantinuoli (2018). In this sense, it would not be far-fetched to claim that

this third wave is prompted by technology-led innovations and the burgeoning spread of AI and its associated technologies and disciplines, including machine learning (ML), deep learning (DL), neural networks (NN), natural language processing (NLP), and others. Even with the vast array of technological tools freely accessible online today, a significant cohort of both professional and trainee interpreters keep using manual techniques and traditional methods in the preparation phase and during the interpreting itself, mainly for two reasons: (1) interpreters do not keep up to date with these new tools (Noriega-Santiáñez, 2023), and (2) many advancements fail to align with the genuine needs of interpreters and are perceived as stumbling blocks rather than aids in their work (cf. Corpas Pastor & Fern, 2016; Corpas Pastor, 2018; Gaber & Corpas Pastor, 2020).

The main objective of this paper is to present a concise analysis of the potential of ChatGPT as a generative AI chatbot application, focusing on the pre-assignment preparation phase of professional interpreters and interpreting students. Flowing from this primary objective is the secondary objective of testing this system's responsiveness as a documentation source for interpreters. An interpreters' preparatory stage was simulated, serving the concrete purpose at hand. In addition to this mock, a three-step protocolized methodology was deployed. Three predefined prompts were formulated on ChatGPT (GPT-3.5 version), and the generated responses were evaluated using three evaluation metrics and three pre-established criteria.

The remainder of the paper is structured as follows. Section 2 briefly discusses some of the AI advances that could be valuable to interpreters. Section 3 covers the experimental design on the effectiveness of ChatGPT as a facilitating technological tool for interpreters. Lastly, Section 4 reports our findings, and is followed by the acknowledgements and the bibliographical references that sustain our work.

2 AI-advancements in interpreter preparation

Interpreting professionals have to cope with a myriad of challenges when they receive a new interpreting assignment. A primary issue for interpreters is the limited time available for becoming acquainted with the subject matter and the domain-specific terminology related to the assignment. This issue is particularly complex when it comes to highly specialized topics, in which technical terms, phraseology, and multi-word terms are more prevalent (Xu, 2015, 2018; Corpas Pastor, 2021). Another challenge lies in the infrequent provision of reference documents, presentations, or other necessary resources for interpreters enough time in advance (Corpas Pastor, 2021, 2022). Likewise, both professional and trainee interpreters grapple with substantial cognitive loads and high levels of stress, stemming from factors such as speech complexity, unanticipated technical problems, and last-minute unforeseen events (Zhu & Aryadoust, 2022).

A number of studies (Díaz-Galaz *et al.*, 2015; Fantinuoli, 2016, 2017; Gaber *et al.*, 2020; Corpas Pastor, 2022) have shown that advanced preparation leads to better interpreters' performance in different interpreting modalities (simultaneous interpreting, conference interpreting, etc.). Due to the usual time constraints and the importance of

the preparation phase, AI appears as a ‘silver bullet’ for interpreters, as it has the capability to generate content within seconds. Concretely, our focus is on a key tool that has been central to this hotly discussed topic and has gained notable popularity at an accelerating pace. The tool concerned is ChatGPT, an AI-powered large language model (LLM) based on GPT-3.5. This chatbot, developed by OpenAI, was launched in November 2022, so its inception is very recent and there is still a lot of room for improvement and further progress. The Chat Generative Pre-trained Transformer (ChatGPT), as its name denotes, uses a sophisticated deep learning method known as *transformer architecture*, which has been trained on large textual datasets sourced from the Internet (Schön *et al.*, 2023; Siu, 2023; Xue *et al.*, 2023).

Building upon the above-mentioned method, ChatGPT provides users with live conversations. It can generate human-like language, characterized by exceptional fluency and naturalness (Schön *et al.*, 2023). Since its release in 2018, OpenAI has carried out ongoing enhancements to the initial version of GPT, derived from the Transformer model decoder. These upgrades have culminated in the latest current version (GPT-4), now manifested as an advance chatbot technology. This tool attracted many stakeholders since its release, owing to its striking performance in NLP-related tasks. Some of these tasks in which it excels include questions answering, text generation and classification, translation, multilingual summarization, or code generation (Lund *et al.*, 2023; Siu, 2023). The application of this AI chatbot is becoming increasingly widespread across various fields, including business, education, and healthcare. Besides, it has sparked the interest of translation researchers and scholars because of its demonstrated machine translation proficiency, comparable to those of the two leading machine translation systems, namely DeepL and Google Translate (Lee, 2023; Siu, 2023).

However, we found scarce research examining the usefulness of ChatGPT as a documentation and support tool during the interpreter preparatory phase. Thus, we delved into the potential functionalities that this technology could offer professional and trainee interpreters for their preparation before assignments, even when working on specialized topics. Despite its advantages, ChatGPT is still a controversial tool, with some considering it as a disruptive technology, and others even arguing for its prohibition (Rudolph *et al.*, 2023; Schön *et al.*, 2023). Furthermore, ChatGPT (GPT-3.5 version) used in this paper has some shortcomings. By way of example, its available knowledge extends only until September 2021, so it is not completely up to date. Nor does it have access to the Internet, so it is unable to respond to specific queries about recent events, news, or publications. Another limitation is that it needs to receive targeted prompts tailored to its capabilities to produce accurate answers. Neither can ethical issues be neglected, since it remains unknown where AI-generated data originates, how it handles texts sourced from the Internet, whether it infringes copyright laws, and who holds ownership of the new produced texts (Schön *et al.*, 2023; Siu, 2023). Therefore, while interpreters can boost their productivity through its application, it is paramount to assess and carefully select the relevant generated content.

3 Methodology and results

This section shifts the focus towards the implementation and assessment of ChatGPT for the automation of the interpreters' preparation process prior to an assignment. Following Corpas Pastor (2021), we have recreated a preparation stage for a blind interpreting assignment¹ on the topic of "gamification". We have selected this topic due to the rising interest in gamification as a teaching-learning methodology within both professional and academic spheres. This interest is reflected in the growing number of international conferences centered on this topic. The forthcoming enumeration comprises various conferences scheduled for the current year, 2023: *GSGS'23 – 8th International conference on Gamification & Serious Games* (June 26-30), *Gamification Europe 2023: The Breakout!* (October 26-27), *ICGLE 2023: 17. International Conference on Gamification in Learning and Education* (November 27-28), or *3rd International Workshop on Gamification and Motivational Technologies (GAMOTEC) 2023* (November 29-30), to cite a few examples.

In instances of blind interpreting assignments, interpreters need to obtain quality information swiftly, thoroughly, and effectively (Corpas Pastor, 2021). Thus, in the following subsections we conducted a mock, featuring three potential queries that an interpreter might pose to gain insights into the previously mentioned subject utilizing ChatGPT (GPT-3.5 version)². We also evaluated the chatbot-generated responses based on three specific criteria: accuracy, relevance, and responsiveness. In the accuracy category, we assessed the precision and correctness of the provided answer. In the relevance category, we tested whether the supplied answer is pertinent and directly addresses the specified query or topic. Lastly, in the responsiveness category, we noted the time it takes to produce a complete response and analyzed the chatbot's ability to answer. We rated these three criteria through three evaluation metrics underpinned by reference authors in the field of gamification: \times (complete fulfillment of the criterion); $/$ (partial fulfillment of the criterion), and \emptyset (non-fulfillment of the criterion).

3.1 Automatic creation of a domain-specific terminology glossary

The compilation of domain-specific terminology glossaries on the conference topic is crucial during both the preparation phase and the interpreting process itself. Nevertheless, there are limited tools available that appropriately cater to the real needs of interpreters. Many of the current Computer-Assisted Interpretation (CAI) tools also fail to cope with the demands of the modern market and present a number of limitations and problems. Some of these limitations are lack of accuracy, low level of automation, excessive requirement for manual review, among other issues (Corpas Pastor, 2021). In this respect, ChatGPT can create multilingual glossaries from scratch on any topic

¹ According to Gaber *et al.* (2020: 267-268), a "blind interpreting assignment" involves a scenario in which the interpreter is only informed of the subject matter of the conference, lacking essential details such as the speaker's background or the speech type.

² We have not employed the latest ChatGPT (GPT-4 version), because it is a subscription-based premium plan priced at \$20/month.

based on a given prompt. Interpreters could activate the terminology of the glossary by asking ChatGPT to generate a text including the glossary’s domain-specific terminology. This approach allows them to engage in two distinct exercises: (1) they could do the sight translation of the text and compare their work with the machine-generated translation provided by the chatbot, and (2) interpreters can input the generated text into various freely available text-to-speech tools online, such as NaturalReader³, TTSTReader⁴, or Speechify⁵. They can then proceed with their interpretation and compare it with the chatbot-generated translation. This stands as a significant perk for interpreters, as it transforms a time-consuming task into a swift endeavor. By way of illustration, Table 1 shows prompt 1, the ChatGPT-generated response⁶, and the response assessment for the automatic creation of a specialized glossary on gamification.

Table 1. Automatic creation of a domain-specific terminology glossary on gamification.

Input/Output	Query 1																										
Prompt 1	Play the role of a gamification expert. Please generate a bilingual glossary (English-Spanish) presented in a tabular format, comprising ten pertinent terms to the specific domain of gamification. Include a concise definition for each of the terms provided. Please note that I need this specialized glossary for my documentation process for a bling interpreting assignment on gamification.																										
ChatGPT (GPT-3.5 version)	<p>Certainly! Here’s a bilingual glossary in English and Spanish related to gamification, presented in a tabular format with concise definitions for each term:</p> <table border="1"> <thead> <tr> <th>English Term</th> <th>Spanish Term</th> <th>English Definition</th> <th>Spanish Definition</th> </tr> </thead> <tbody> <tr> <td>Gamification</td> <td>Gamificación</td> <td>The use of game design elements, such as points, badges, and rewards, in non-game contexts to engage and motivate people to achieve specific goals.</td> <td>El uso de elementos de diseño de juegos, como puntos, medallas y recompensas, en contextos no relacionados con juegos para involucrar y motivar a las personas a alcanzar objetivos específicos.</td> </tr> <tr> <td>Points</td> <td>Puntos</td> <td>Virtual currency or scores awarded to users for completing specific tasks or actions within a gamified system.</td> <td>Moneda virtual o puntajes otorgados a los usuarios por completar tareas o acciones específicas dentro de un sistema gamificado.</td> </tr> <tr> <td>Badges</td> <td>Insignias</td> <td>Digital icons or symbols awarded to users as recognition for achieving specific accomplishments or milestones in a gamified environment.</td> <td>Iconos o símbolos digitales otorgados a los usuarios como reconocimiento por lograr logros o hitos específicos en un entorno gamificado.</td> </tr> <tr> <td>Leaderboard</td> <td>Tabla de clasificación</td> <td>A visual display that ranks users based on their performance or achievements in a gamified system, fostering competition and motivation.</td> <td>Una pantalla visual que clasifica a los usuarios según su rendimiento o logros en un sistema gamificado, fomentando la competencia y la motivación.</td> </tr> <tr> <td>Quest</td> <td>Misión</td> <td>A set of tasks or challenges within a gamified context that users must complete, often leading to rewards or progression in the game.</td> <td>Un conjunto de tareas o desafíos dentro de un contexto gamificado que los usuarios deben completar, a menudo llevando a recompensas o progresión en el juego.</td> </tr> </tbody> </table> <p>I hope this glossary is helpful for your documentation process and interpreting assignment! If you have any specific questions or need further assistance, feel free to ask. ¡Buena suerte con tu tarea! (Good luck with your assignment!)</p>			English Term	Spanish Term	English Definition	Spanish Definition	Gamification	Gamificación	The use of game design elements, such as points, badges, and rewards, in non-game contexts to engage and motivate people to achieve specific goals.	El uso de elementos de diseño de juegos, como puntos, medallas y recompensas, en contextos no relacionados con juegos para involucrar y motivar a las personas a alcanzar objetivos específicos.	Points	Puntos	Virtual currency or scores awarded to users for completing specific tasks or actions within a gamified system.	Moneda virtual o puntajes otorgados a los usuarios por completar tareas o acciones específicas dentro de un sistema gamificado.	Badges	Insignias	Digital icons or symbols awarded to users as recognition for achieving specific accomplishments or milestones in a gamified environment.	Iconos o símbolos digitales otorgados a los usuarios como reconocimiento por lograr logros o hitos específicos en un entorno gamificado.	Leaderboard	Tabla de clasificación	A visual display that ranks users based on their performance or achievements in a gamified system, fostering competition and motivation.	Una pantalla visual que clasifica a los usuarios según su rendimiento o logros en un sistema gamificado, fomentando la competencia y la motivación.	Quest	Misión	A set of tasks or challenges within a gamified context that users must complete, often leading to rewards or progression in the game.	Un conjunto de tareas o desafíos dentro de un contexto gamificado que los usuarios deben completar, a menudo llevando a recompensas o progresión en el juego.
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Evaluation metrics	Accuracy	Relevance	Responsiveness																								
	✗	✗	44.95 seconds																								

³ NaturalReader, online <<https://www.naturalreaders.com/online/>>.

⁴ TTSTReader, online <<https://ttsreader.com/>>.

⁵ Speechify, online <<https://n9.cl/9wasb>>.

⁶ Due to space constraints, we have included only the first five examples of terms from the glossary. For a comprehensive overview, readers are encouraged to access the complete AI-generated response on ChatGPT for prompt 1 through the following link: <<https://chat.openai.com/c/e16e73a2-1fe1-4bd5-a4f3-b6e26b3e54eb>>.

We deem the results positive in terms of accuracy, relevance, and responsiveness. Despite restricting the glossary to ten terms, its selection remains pertinent and precise. It encompasses the term *gamification*, six gamification elements (including five components [points, badges, leaderboard, quest, and level up] and one mechanic [feedback loop] in line with the pyramidal classification outlined in Alcaide-Martínez and Taillefer, 2022, p. 286), along with three related terms (engagement, gamified learning, and serious games). The chatbot provided a complete answer within an exceptionally short timeframe. In the same vein, the Spanish equivalents are correct and adequate when compared to those found on online reference dictionaries based on corpora, such as Linguee⁷ or Reverso Context⁸. Whereas certain parts of the Spanish machine translation are not completely natural, the definitions of the terms are of high quality, as they characterize the terminology concisely and are in tune with those contributed by reference authors in the field, such as Deterding *et al.* (2011), Kapp (2012), and Werbach and Hunter (2015).

3.2 Specific documentation question and synonyms query

Thorough advance preparation is fundamental for interpreter’s confidence and performance. This painstaking preparation endows interpreters with a sense of control and reduced stress, enabling the production of high-quality interpretations. Interpreters usually have little time to prepare and research the conference topic. Hence, conducting accurate research and queries during the preliminary preparation phase is essential for the purpose of saving time and gaining productivity (cf. Díaz-Galaz *et al.*, 2015; Fantinuoli, 2017; Gaber *et al.*, 2020). In response to this need, ChatGPT has the ability to rapidly answer inquiries on specific topics without requiring exhaustive context or beforehand compiled information. Table 2 collects prompt 2, the ChatGPT-generated response, and the response assessment for two specific documentation queries on gamification.

Table 2. Specific documentation question and synonyms query on gamification.

Input/Output	Query 2
Prompt 2	Play the role of a gamification expert. Firstly, I need the origin of the term ‘gamification’ – who coined it and when? In addition, please provide a comprehensive list of synonyms for ‘gamification’. I need this information for my documentation process for a blind interpreting assignment on the topic of gamification, so I would need concise and valuable information.
ChatGPT (GPT-3.5 version)	Certainly! Gamification is a concept that emerged in the early 21st century, primarily popularized by Nick Pelling, a British-born computer programmer and inventor, in 2002. The term “gamification” refers to the application of game design elements and principles in non-game contexts to engage and motivate people. Its purpose is to enhance user experiences, encourage participation, and solve problems.

⁷ Linguee, online <<https://www.linguee.es/>>.

⁸ Reverso Context, online <<https://context.reverso.net/traduccion/>>.

	<p>As for synonyms for gamification, here's a concise list you can use for your documentation:</p> <ol style="list-style-type: none"> 1. Gameful Design 2. Ludification 3. Game Mechanics 4. Playful Design 5. Interactive Design 6. Game Thinking 7. Engagement Design 8. Applied Gaming 9. Gameful Experience 10. Pervasive Gaming 11. Serious Games (Note: This term often refers to games designed for educational or training purposes, but the principles overlap with gamification.) <p>These terms are often used interchangeably or in specific contexts to describe the incorporation of game elements into various activities or processes to enhance user engagement and motivation. Good luck with your blind interpreting assignment! If you have any more questions or need further assistance, feel free to ask.</p>		
Evaluation metrics	Accuracy	Relevance	Responsiveness
	/	/	13.63 seconds

The obtained response was assessed as partially accurate and relevant, although characterized by a good responsiveness within an extraordinarily brief timeframe. The answer about the origin is precise and pertinent, as the term *gamification* was indeed coined by Nick Pelling in 2002 (Oliver, 2017). Furthermore, the chatbot complied with the requested conciseness criterion. It has nevertheless briefly provided other valuable information, such as Nick Pelling's profession and a succinct definition of gamification. As far as the synonyms query is concerned, the answer is neither correct nor totally relevant, since only two (*gameful design* and *applied gaming*) out of eleven generated 'synonyms' could actually be used as synonyms. The remaining nine terms represent other concepts with different nuances (cf. Deterding *et al.*, 2011; Oliver, 2017). However, the chat only clarifies this for the last term.

3.3 Automated bilingual extraction of domain-specific terminology from text

The automatization of certain documentation processes, such as bilingual or multilingual terminology extraction, would contribute to reducing the load and cognitive effort of interpreters. Revising entails less strain than starting from scratch, so interpreters would unquestionably benefit from this mechanization (Corpas Pastor, 2021, 2022). In this sense, ChatGPT is able to extract domain-specific terminology related to a given topic in bilingual or even multilingual format from supplied texts. Table 3 presents prompt 3, the ChatGPT-generated response⁹, and the response assessment for the automated bilingual extraction of domain-specific terminology from two paper abstracts on gamification.

⁹ Complete prompt 3 and AI-generated response on ChatGPT <<https://chat.openai.com/c/329d2220-f82d-48b2-883a-e68598756d10>>.

Table 3. Automated bilingual extraction of domain-specific terminology from two paper abstracts on gamification.

Input/Output	Query 3		
Prompt 3	<p>Play the role of a gamification expert. Your task is to extract all the domain-specific terminology on gamification from the two paper abstracts provided. Moreover, I require the corresponding Spanish translations for each of the extracted terms. Please note that I need this information for my documentation process for a blind interpreting assignment on the topic of gamification. The two abstracts are provided below:</p> <p>[Abstract 1 retrieved from Deterding <i>et al.</i> (2011)] [Abstract 2 retrieved from Oliver (2017)]</p>		
ChatGPT (GPT-3.5 version)	<p>Certainly, here are the extracted gamification-related terms from the provided abstracts along with their corresponding Spanish translations:</p> <ol style="list-style-type: none"> 1. Gamification – Spanish Translation: <i>Gamificación</i> 2. Mass-market consumer software – Spanish Translation: <i>Software de consumo de masas</i> 3. Serious games – Spanish Translation: <i>Juegos serios</i> 4. Pervasive games – Spanish Translation: <i>Juegos omnipresentes</i> 5. Alternate reality games – Spanish Translation: <i>Juegos de realidad alternativa</i> 6. Playful design – Spanish Translation: <i>Diseño lúdico</i> 7. Gamified applications – Spanish Translation: <i>Aplicaciones gamificadas</i> 8. Game design elements – Spanish Translation: <i>Elementos de diseño de juegos</i> 9. Corporate market – Spanish Translation: <i>Mercado corporativo</i> 10. Digital Wisdom generation – Spanish Translation: <i>Generación de Sabiduría Digital</i> 11. Educational institution – Spanish Translation: <i>Institución educativa</i> 12. Online assessment tool – Spanish Translation: <i>Herramienta de evaluación en línea</i> <p>Please note that these translations are based on standard terminology and might vary depending on the context of your interpreting assignment. If you need further assistance or specific translations for additional terms, feel free to ask!</p>		
Evaluation metrics	Accuracy	Relevance	Responsiveness
	/	×	17.57 seconds

The generated response was evaluated as partially accurate and correct, but relevant and with a high capacity to respond in a short time. The selected terminology was appropriate and pertinent, although the term *corporate market* is slightly outside the specific scope of gamification. The following domain-specific terms used in the abstracts have not been included in the AI-produced list: *video games*, *human-computer interaction*, *game studies*, *gameful phenomena*, *playful phenomena*, *non-game contexts*, *education*, *assessment*, and *implementation*. These terms are frequently employed by reference authors, such as Deterding *et al.* (2011), Kapp (2012), and Werbach and Hunter (2015), in their works. Thus, they should appear on the list. Finally, upon comparing the Spanish equivalent translations available on Linguee and Reverso Context, we found that the only two translations that could be improved are *juegos omnipresentes*

[juegos pervasivos] and *elementos de diseño de juegos* [elementos propios de los juegos].

4 Conclusions

In this experimental study we have simulated some of the documentation tasks that an interpreter could undertake using the generative AI chatbot application, known as ChatGPT (GPT-3.5 version), in the preparation phase for a blind interpreting assignment on the hot topic of “gamification”. After conducting three task tests and evaluating them by means of the three predefined criteria of accuracy, relevance, and responsiveness, as well as consulting reference authors in the area of gamification, the gathered results proved to be remarkably compelling.

Through the three prompts of the mock, this chatbot has demonstrated that it is able to skillfully produce a generally accurate and relevant response within a few seconds. Additionally, it has shown an outstanding ability in performing challenging and time-consuming tasks traditionally done by humans, such as the creation of domain-specific terminology glossaries, the precise retrieval of information for specific queries, and the bilingual extraction of domain-specific terminology from monolingual texts. However, this generative AI still makes mistakes and does not function as a substitute for the human being, but rather as a technological tool to support the interpreters’ work. This chatbot is deemed to be highly advisable for the automation of documentation tasks among professionals and interpreting students, especially in the preparation phase. It could also offer meaningful assistance during the interpreting process itself.

In light of the achieved findings, we intend to carry out another experimental study as a future line of work with more mock queries of essential documentation tasks for interpreters and more evaluation metrics that would enable a more accurate measurement of this system’s effectiveness. It would also be interesting to train students and professionals in employing suitable prompts to obtain accurate and pertinent responses. For instance, we have noted that when the chatbot is prompted to act as a gamification expert, the generated answers are better aligned with the query. Finally, we strongly advise keeping abreast of updates and new functionalities of this AI system, as it can offer numerous advantages to interpreters in their daily work.

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Boosting Interpreting Skills through Technologies: A Didactic Proposal

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Abstract. The world of interpreting in the digital era poses constant challenges for professionals and students alike, as emerging realities and developing technologies reshape certain activities. For this reason, this paper presents a didactic proposal in a simultaneous interpreting module for undergraduate students. A lesson plan is designed based on a mock congress, structured in two sessions, in which a series of technological tools are used: the VIP II system, two AI tools (summary generator and speech-to-text software), and the corpus management software Sketch Engine. The aim of this didactic proposal is to test the effectiveness of these tools in a sequence of activities that are planned to prepare the student for an interpreting assignment. Finally, several conclusions are drawn on the integration of these technologies into the students' workflow and the need to incorporate them into the subject's syllabus. This proposal also contributes to assess the students' proficiency and address their specific interpreting requirements.

Keywords: Didactic Proposal, New Technologies, Artificial Intelligence.

1 Introduction

The advent of new technologies has inevitably brought about significant changes in our personal and professional settings, and the interpreting sector is not left out of this revolutionary phenomenon. Therefore, both the way the interpreting assignment is delivered and prepared has been altered (Spinolo and Amato, 2020), especially in the last two decades. Braun (2019) distinguishes three different types of technologies in the interpreting panorama: (1) technologies that help long-distance communication, (2) technologies that assist the interpreter during all phases of their work (preparation, performance, and workflow), and (3) technologies that substitute human interpreter's activity.

Since this study mainly focuses on the second ones, it is key to know the different technologies that have been developed to assist and enhance the interpreter's performance. Unlike translators, who are more accustomed to use technological tools, as they have more at their disposal, interpreters still prefer to use traditional resources (Costa *et al.*, 2014). However, greater attention has begun to be paid to technology-assisted interpreting in recent years (Corpas Pastor and Fern, 2016). These tools and resources range from audio input tools, concordancers or glossary management tools (Corpas

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Pastor and Fern, 2016; Fantinuouli, 2018b) to computer-assisted interpreting (CAI) tools, which “basically encompass terminology management tools, note-taking applications and voice-text devices” (Corpas Pastor, 2018: 142).

In our previous study (Noriega-Santiañez, 2023), it has been observed an imperative need to equip students with the necessary tools that make up for certain shortcomings related to the interpreting task. Following these results, our study aims to present a didactic proposal to explore the use of multiple technologies in a simultaneous interpreting module (English-Spanish language pairs). The paper is organized as follows: Section 2 provides some insights on the current interpreting technologies within the educational context. Section 3 describes the didactic proposal structured in two sessions (Section 3.1 and Section 3.2), which includes four different technological tools: the VIP II system¹, AI summary generator (Summarizer²), Sketch Engine³, and AI speech-to-text software (Transkriptor⁴). Finally, Section 4 entails the conclusions and potential avenues for future research.

2 New educational scenarios in interpreting

After the succession of a series of technological breakthroughs in the 20th and 21st century, we are now facing an unprecedented “technological turn in interpreting” (Fantinuouli, 2018b: 3). This may entail an important socio-economic change in the work of the interpreter and in how their profession is perceived, as different forms of interpreting have emerged (Fantinuouli and Prandi, 2018; Gaber and Corpas Pastor, 2020). Within this new digital landscape, the development of CAI-tools, remote interpreting, and machine interpreting stands out (Fantinuouli, 2018b).

Thus, the interpreter is confronted not only with familiar challenges, such as the limited time available to prepare an interpreting assignment (Sandrelli, 2015), the lack of information or preparatory documents (Fantinuoli, 2018a), as well as the obvious “language-specific constrains” (Sandrelli, 2015: 115), but also with new facets of an interpreting panorama. Against this background, several tools and resources are developed to assist the interpreter at various stages of their work. To name but a few, interpreters can be equipped by terminology management systems (e.g., Interpreters’Help or Glossary Assistant), corpora (e.g., Sketch Engine), CAI tools (e.g., InterpretBank or Black Box), 3D virtual learning environments (e.g., IVY and EVIVA projects), or ad-hoc developed programs such as the VIP system (Corpas Pastor and Fern, 2016; Corpas Pastor, 2021). The VIP system “is a web portal that comprises an open catalogue of interpreting related tools and resources [...] and a suite of platform integrated functionalities to assist interpretation at all phases: preparation, delivery, training, and life-long learning” (Corpas Pastor, 2021: 99). Its functionalities range from text summarization to semi-automatic corpus compilation or glossary management, to mention just a few.

¹ VIP - Voice-text Integrated system for interPreters (ref. no. FFI2016-75831-P).

² Available at <<https://www.summarizer.org/>>.

³ Available at <<https://www.sketchengine.eu/>>.

⁴ Available at <<https://transkriptor.com/>>.

Furthermore, the development of the AI has brought different tools to this scenario (e.g., ChatGPT-3, summarizing tools or speech-to-text softwares) that are starting to be applied in translation studies, as well as in educational contexts (cf. Lee, 2023; Baidoo-anu and Owusu Ansah, 2023). Precisely, the use of AI applied to teaching would make students aware of its limitations; it would also enrich the interpreting practice materials and might help students to develop or enhance other skills under the guidance of the teacher (Jiang and Lu, 2021). For this reason, future generations of interpreters should be up to date with the technologies at their disposal, so they could deal with these old and new realities and cope with the challenges that lied ahead (Corpas Pastor, 2021; Wang and Li, 2022).

The nature of our work is based on several studies that focus on how to include technologies in an interpreting module. Sandrelli and Jerez (2007)'s study explores the available resources and digital teaching techniques applied to interpreting trainees. Prandi (2015) assesses the possibility of integrating technologies into the curriculum through practical sessions on the use of CAI-tools for master's degree students. This idea is further developed by Fantinuoli and Prandi (2018), who reflect on adapting the interpreters' curriculum according to the current digital scenario, and so they design a didactic program which integrates practice and study of technologies. Furthermore, some other academic studies place their emphasis on strategies for introducing technologies into interpreter training by means of a series of instructional sessions. Xu (2018) investigates whether students in a simultaneous interpreting module acquire greater accuracy on a topic by following a corpus-based terminological preparation procedure, in particular using a term extraction tool and a concordance tool (Sketch Engine). Moreover, Prandi (2018) investigates the use of CAI-tools, namely InterpretBank, in a series of simultaneous interpreting sessions with master's degree students, evaluating the terminological quality of the students' performance. Finally, Postigo Pinazo and Aguilera Crespillo (2023) introduce the VIP system in a consecutive interpreting module and assess their usefulness through questionnaires, resulting in promising cognitive outcomes among undergraduates.

Following some of the didactic approaches of the studies mentioned above, the section below proposes a lesson plan for two simultaneous interpreting sessions.

3 Didactic proposal

The didactic proposal is designed for a simultaneous interpreting module and encompasses a lesson plan structured in two sessions, each lasting 90 minutes. It simulates an interpreting assignment task in the English>Spanish language combination, framed within the context of a mock congress. It pursues the aim to engage interpreting trainees with technologies to help them cope with diverse challenges. The students share the following profile: they have a high level of both English and Spanish, and they are final year undergraduates, i.e., they have previously taken at least two interpreting modules. In addition, they have attended a previous session to learn how to work with the tools presented below, and so they are familiar with them.

In the following sections, an in-depth description of the two sessions is proposed, as well as a simulation with tentative examples of the technologies used. The table below outlines the lesson plan of this didactic proposal.

Table 1. Lesson plan summary.

Structure	Session 1		Session 2	
	Activity	Time	Activity	Time
1 st part	1. Pre-test	10 min	5. Interpreting assignment	30 min
	2. Simulation of the interpreting assignment	40 min		
2 nd part	3. Summary of the main information	15 min	6. Self-assessment	45 min
	4. Keyword extraction and glossary creation	25 min	7. Post-test	15 min

3.1 Session 1

The first session of the didactic proposal is organized in four activities as follows:

Pre-test [Activity 1]: The students will complete a pre-test to assess both their previous notions on technologies (their interest or knowledge on AI) and their work methodology (when preparing for an interpreting assignment and self-assessing their performance). It serves as a prelude to reflect on the role of technologies applied to interpreting, their ethical use, and share their critical opinion. Once they all finish, a brief brainstorming will be held. This activity will take 10 minutes.

Table 2. Pre-test.

PRE-TEST		
Modality	Questions	Typology
Yes/No	1) Use of technological tools in the preparation phase, 7) Knowledge on interpreting technologies	Preparation for an interpreting assignment
Choose an option	5) Self-assessment habits	Self-assessment
Choose one or several options	2) Technological tools in the preparation phase, 6) Technological tools for self-assessment, 8) Attainment of technological knowledge	Preparation for an interpreting assignment / Self-assessment
Short answer	3) Time, 4) Challenges	Preparation for an interpreting assignment

Simulation of the interpreting assignment [Activity 2]: The introduction of the mock congress is planned to last 40 minutes, organized in two main phases. First, the students are introduced the fundamental details of the mock congress (venue, date, topic) via email [Figure 1]. Later, the teacher will provide a PDF file which includes a summary of the contributions of the mock congress, which is related to AI and medicine. To increase the difficulty, the students will write a professional reply to accept the job offer and negotiate their rates.

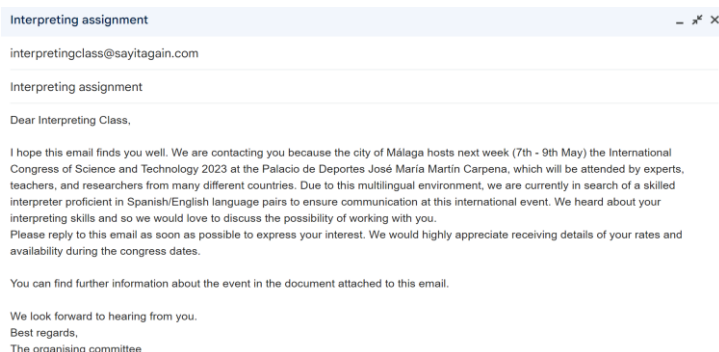


Fig. 1. Interpreting assignment email.

Subsequently, the teacher will encourage the students to find information on the event. They should take some notes and organize their retrieved information logically.

To implement this proposal, three relevant and current works on the subject have been collected, specifically the studies of Wang *et al.* (2023), Carobene *et al.* (2023), and Haug *et al.* (2023). This tentative sample would be used to simulate the steps that the students would take during the mock congress for activities 3 and 4.

Summary of the main information [Activity 3]: The information gathered by the students in the previous activity will be summarized using the VIP system and Summarizer [Figure 2]. Both outcomes will be compared, and thus the students might assess their benefits for the interpreting assignment. Subsequently, the students might reflect on the topic and classify the information according to their needs, strengths, and shortcomings on the subject matter. This activity will take 15 minutes.

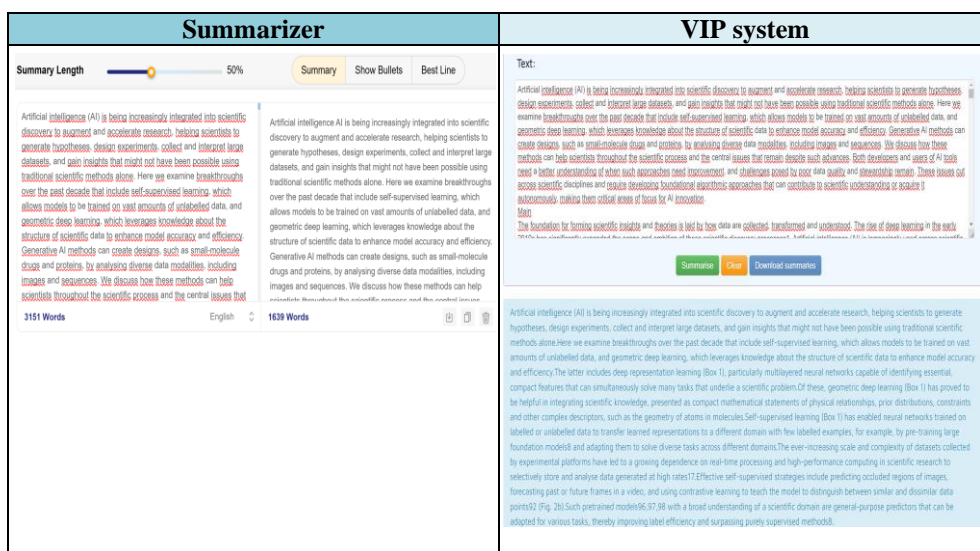


Fig. 2. Summaries of the Article 1 (Wang *et al.*, 2023) by Summarizer and the VIP system.

Keywords extraction and glossary creation [Activity 4]: Firstly, the students will gather essential files on the topic to compile a tailored corpus. Subsequently, they will use both the VIP system and Sketch Engine to extract key words (single-words and multi-word terms). Hence, these terms will be used to create specialized terminology glossaries with the help of the VIP system, and then the students can later expand with additional vocabulary and review independently. This activity will take 25 minutes and contributes to boost terminology accuracy.

Sketch Engine		VIP system																													
SINGLE-WORDS ✓ MULTI-WORD TERMS ✓ reference corpus: English Web 2021 (enTenTen21) (Items: 3,518)		Glossary management																													
Glossary name: SAY IT AGAIN 23		Show Close																													
<table border="1"> <thead> <tr> <th>Lemma</th> <th>Lemma</th> </tr> </thead> <tbody> <tr><td>1 self-supervised</td><td>14 deep-learning</td></tr> <tr><td>2 reinforcement-learning</td><td>15 chatbot</td></tr> <tr><td>3 autoencoder</td><td>16 physics-informed</td></tr> <tr><td>4 intell</td><td>17 engl</td></tr> <tr><td>5 generative</td><td>18 phys</td></tr> <tr><td>6 comun</td><td>19 comput</td></tr> <tr><td>7 neural</td><td>20 black-box</td></tr> <tr><td>8 differentiable</td><td>21 biotechnol</td></tr> </tbody> </table>		Lemma	Lemma	1 self-supervised	14 deep-learning	2 reinforcement-learning	15 chatbot	3 autoencoder	16 physics-informed	4 intell	17 engl	5 generative	18 phys	6 comun	19 comput	7 neural	20 black-box	8 differentiable	21 biotechnol	<table border="1"> <thead> <tr> <th>ES</th> <th>EN</th> </tr> </thead> <tbody> <tr><td>Aprendizaje profundo</td><td>Deep learning</td></tr> <tr><td>Aprendizaje por refuerzo</td><td>Reinforcement-learning</td></tr> <tr><td>Equivalente</td><td>Equivalent</td></tr> <tr><td>Codificador automático</td><td>Autoencoder</td></tr> </tbody> </table>		ES	EN	Aprendizaje profundo	Deep learning	Aprendizaje por refuerzo	Reinforcement-learning	Equivalente	Equivalent	Codificador automático	Autoencoder
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Fig. 3. Keyword extraction by Sketch Engine and Glossary management by the VIP system.

3.2 Session 2

While the first session is focused on the preparation for the interpreting assignment, the second session is devoted to the interpreting practice and the student’s assessment, as outlined below:

The interpreting assignment [Activity 1]: The simultaneous interpreting assignment consist of a 30-minute video in which several talks in English address the subject matter. During the interpreting practice, the students will record their own performance using Transkriptor, which will then transcribe it. A video excerpt from the English congress on Artificial Intelligence in Science⁵ by the Saint Camillus International University of Health and Medical Sciences is chosen for this activity. In the figure below [Figure 4], a simulation of a student’s interpreting transcription in Spanish is showed to illustrate the way the speech-to-text software works.

⁵ Available at https://www.youtube.com/watch?v=TDtAzDmRE1k&ab_channel=UniCamillus.

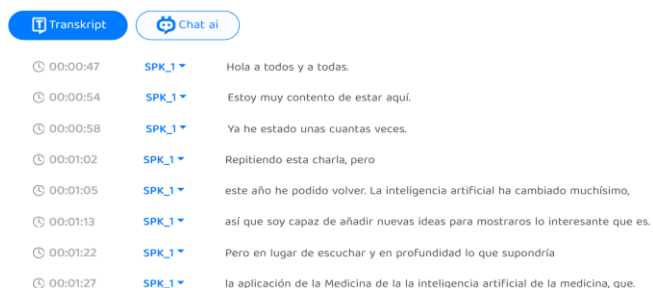


Fig.4. A simulation of a speech transcription using Transkriptor.

Self-assessment [Activity 2]: Besides the teacher’s feedback, the students will assess their own performance in 45 minutes by using a rubric. They will compare the source video with their transcribed text and recording audio produced by Transkriptor. Their production will be assessed in the first seven questions considering four main items: speech (fluently, intonation, and pronunciation) and linguistic, semantic, and cultural mistakes. Each of these questions has its own score depending on their performance, aiming to motivate the students to continually boost their skills. The last two questions are self-reflections on their way of improving in future practices and the AI usefulness.

Table 3. Self-assessment rubric

SELF-ASSESSMENT		
Modality	Questions	Typology
Rating 1-5	1) Difficulty, 2) Own performance, 3) Mistakes, 4) Linguistic mistakes, 5) Semantic mistakes, 6) Cultural mistakes, 7) Speech	Critical analysisist
Long answer	8) Ways of improvement	
Yes/No	9) AI usefulness	Personal opinion

Post-test [Activity 3]: The post-test is scheduled to last 15 minutes. It will be used as a mean to evaluate the interpreting task, identify the most useful tools, and analyze the best strategy during the preparation phase. It will help the teacher to tailor future sessions to address the specific needs of the students, thus making special emphasis on their most pressing deficits. In addition, the students will be inquired if they would integrate any of these technologies into their workflow and if they believe there is a need to include them into the subject’s syllabus. The questions are detailed below.

Table 4. Post-test

POST-TEST		
Modality	Questions	Typology
Rating 1-5	1) Assessing of the interpreting task	Personal opinion
Choose an option	2) Best e-tool, 3) Best e-tool to summarize, 4) Best e-tool to extract terminology	Critical thinking
Choose one or several options	5) Most useful strategy for preparing an interpreting assignment	
Yes/ No questions	6) Integration of technologies into their workflow, 7) Need for teaching interpreting technologies	Personal opinion

4 Conclusions

The didactic proposal presented in this study serves as a tentative example to introduce technologies in a simultaneous interpreting module. The activities described in these two sessions might enhance students' skills and prepare them for the previous stages of an interpreting assignment. Furthermore, it is key to highlight the potential of AI tools, and specially, the VIP system, which integrates multiple functions, ranging from summarizing to glossary creation, that can assist the interpreter in multiple phases of their work. Even if students do not include all of them into their workflow, they are aware of their limitations and uses, hence the need to incorporate these notions into their curriculum.

Due to space constraints, this proposal has not been implemented yet in an interpreting module. Thus, our future aim is to apply this methodology with undergraduates or master's degree students. The gathered data will provide insights into students' preferences concerning e-tools and whether these technological advances truly save time and improve their productivity. In fact, it is required a careful consideration of the student's level of stress and frustration when using new tools. Amidst this technological landscape, it is worth considering all these aspects so that trainees can be equipped with the necessary tools to navigate the challenges inherent of the field of interpreting.

Acknowledgements

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Leveraging Microsoft Translator to Enhance Consecutive Interpretation Training in the Classroom

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Abstract. This paper explores the innovative use of Microsoft Translator as an educational tool to improve consecutive interpretation training in the classroom. Consecutive interpretation is a vital skill for interpreters, and leveraging technology can significantly enhance the learning experience. This paper discusses the potential benefits of integrating Microsoft Translator into the classroom. By examining the features and benefits of the software, discussing best practices for integration, and addressing potential challenges, educators can better understand how to harness this technology for effective interpreting training.

Keywords: Interpreting Technologies, Consecutive Interpreting, Machine-human Interaction, collaborative learning, Computer-Assisted Interpreting Tools, Computer-Assisted Interpreting Training Tools.

1 Introduction

Consecutive interpretation (CI) is a complex and demanding interpreting mode that involves listening to a speaker in one language and rendering their speech into another language with accuracy, coherence, and fluency. Training future interpreters in the classroom requires intensive practice, linguistic proficiency, and an understanding of the cultural nuances of both source and target languages. In an educational context, teaching and mastering CI can be a challenging process, involving a combination of theory, practice, and feedback. Interpreting trainers are continually seeking innovative ways to improve CI training in the classroom.

This paper aims to explore the use of Microsoft Translator as a valuable tool in the classroom for teaching consecutive interpretation. By using this technology effectively, language instructors can provide students with valuable learning experiences that go beyond traditional teaching methods. This paper explores the ways in which Microsoft Translator can be employed to enhance CI training in the classroom.

2 Consecutive Interpreting Technologies: A brief overview

As technology continues to advance, interpreters must adapt and leverage the use of the technological tools to enhance their performance while maintaining the highest standards of accuracy and professionalism. The interpreting field has witnessed a growing body of research and a broad array of technologies that support interpreters in their work (Tripepi Winteringham 2010; Costa, Corpas Pastor & Durán Muñoz 2014; Sandrelli 2015; Fantinuoli 2016; 2017^a, 2018^b; Corpas Pastor 2018; Ortiz & Cavallo 2018; Corpas Pastor 2022; Guo et al 2023). Notwithstanding, the state of the art reveals a scarcity on the technologies and studies dedicated to enhance the interpreter's skills or to aid them during the CI itself. Moreover, the technologies available for interpreting training, in general, are not sufficient in terms of quantity and quality (Corpas Pastor 2022; Gaber & Corpas Pastor, forthcoming). This section provides a brief chronological overview about the technologies that have been used or proposed for CI.

- **SimConsec:** In 1999 Ferrari invented a new CI technique which involves using a voice recorder to record the original speech at the same time of listening to it, and then rendering the interpreting from the playback without relying on notes nor memory (Ferrari, 2001). This technique has been named SimConsec, simultaneous consecutive, consec Simul and digital recorder-assisted consecutive (Lombardi 2003; Hamidi & Pöchhacker 2007). On the other hand, Comayad-Freixas (2005) suggested the use of hybrid mode which means the use of SimConsec technique but coupled with selective note taking for named entities.
- **Smart Pens and CI:** Orlando (2010) introduced the use of the digital pen technology as an assessment and evaluation tool for interpreting training. More studies to assess and analyse the process of digital note taking have followed (Bidoli, C. J. K., & Vardè, S. 2016; Ruan, L.; Z. Xiong; L. Jiang & X. Zhou 2015).
- **Cleopatra App:** Torre Salceda (2017) proposed a new tool to help the interpreters memorising the new terms during the interpreting documentation phase.
- **Integrated tools for real-time and automatic transcription and translation:** In order to improve the efficiency and accuracy of the CI process, Fantinuoli (2023) created an "AI-enhanced Consecutive Pad". In the same vein, Ünlü (2022) proposed another tool with similar features, but enhanced the user interface .

3 Microsoft Translator: An overview

Microsoft Translator is a cloud-based machine translation service developed by Microsoft. It offers translation capabilities for over 60 languages and supports various input methods, including text, speech, and images (Microsoft, 2023). The software is accessible through web applications and mobile apps, making it versatile for both trainers and trainees.

Key Features:

- a. **Real-Time Translation:** Microsoft Translator can provide real-time translations for spoken language.

- b. *Text Translation*: The software can translate written text, allowing students to work on written translations as well.
- c. *Speech Recognition*: It recognises spoken language and provides translations.
- d. *Multiple Languages*: Microsoft Translator covers a wide range of languages, enabling students to practice interpretation between various language pairs.

4 Illustrative Methodology

This section proposes a methodology (simulation-based assignment) which can be used by interpreting trainers in order to enhance their students' skills on CI.

- **Assignment**: It is a CI assignment in a specialised topic. David Cameron, former Prime Minister of the UK, delivers a speech on Climate Change during a session at the United Nations Organisation, which will be interpreted into Spanish by the students.
- **Assignment objective**: The assignment aims to enhance student's skills on CI and familiarise them with the use of technologies: Automatic Speech Recognition (ASR) and Machine Translation (MT).

- **Procedure**:

Step 1. Install and launch Microsoft Translator application on a mobile device (versions are available for iOS and Android). This step will be performed by both the trainer and trainees.

Step 2. The trainer shall choose the language pairs. The application offers a wide range of languages. In this case, as an example, we have selected English > Spanish.

Step 3. Press the green button located in the upper right corner.

Step 4. On the following screen, a code shall be generated automatically. The trainer shall provide it to the students who will be in charge of the interpretation after listening to the speech.

Step 5. The students shall use the code to start the session through: <https://translator.microsoft.com> (see Fig. 1)

Step 6. Now the trainer can activate the microphone icon located in the lower left corner and start playing the speech: <https://www.youtube.com/watch?v=f1NZEqgd7zw>

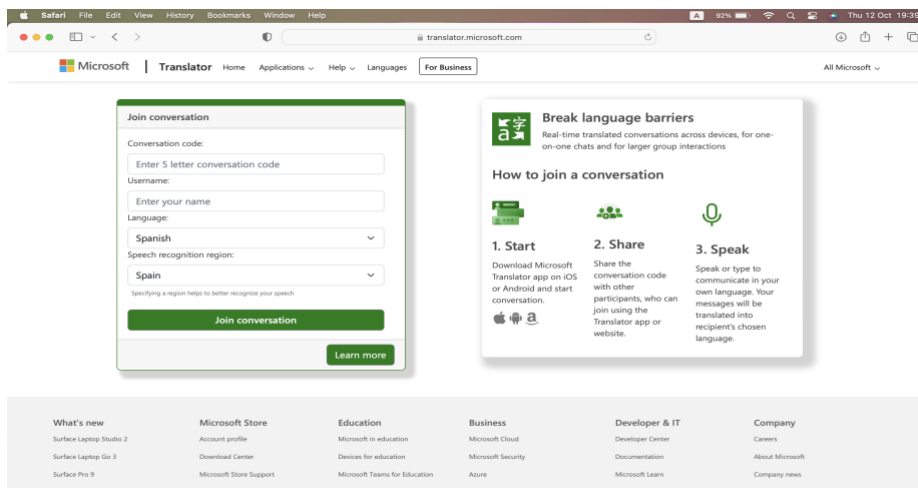


Fig. 1. Logging into Microsoft Translator through a desktop or laptop PC

Step 9. On the trainer's screen, the speech transcription, which is English in this case, shall appear while, on the student's screen, the transcription will be displayed in separated paragraphs along with its respective translation (Fig. 2).

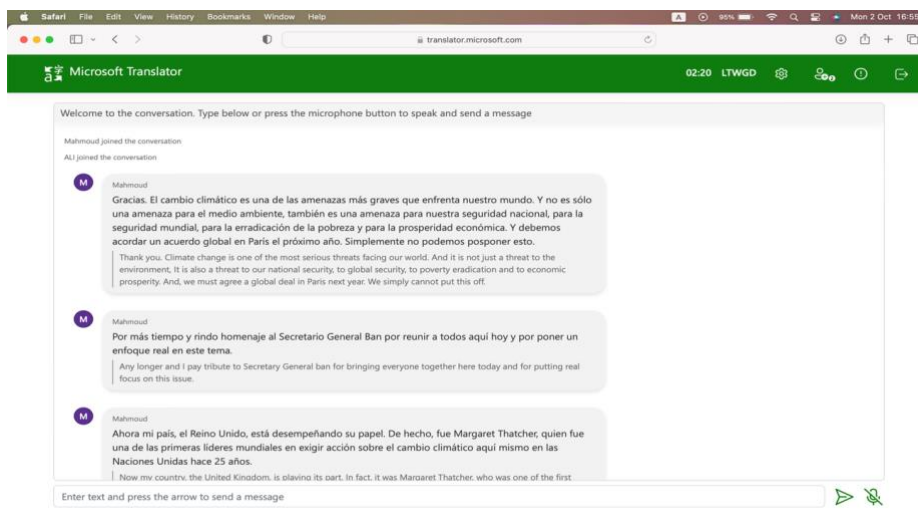


Fig. 2. Transcription along with the translation

It is worth noticing that the tool is merely an aid, so that the student has the final decision about the accuracy of both the transcription and the translation. Consequently, they can use the result as it is or make any necessary or appropriate changes.

5 Practical applications of using Microsoft Translator in the classroom

Microsoft Translator can be a valuable addition to the classroom for training consecutive interpretation skills. Its real-time translation capabilities, practice opportunities, and collaborative features make it a versatile tool for interpreting trainers and trainees. The tool alleviates certain inconveniences that have been identified in the prior methods outlined in Section 2. For instance, the application of the SimConsec technique may appear somewhat artificial and less practical for particular language pairs (Cf. Hamidi and Pöchhacker, 2007; Ferrari, 2002). Furthermore, in the case of the smart pen, the note-taking process remains partially manual, as the interpreter is still required to take notes during the listening phase. Additionally, a mandatory training requirement is in place to familiarize interpreters with the operation of the smart pen and to acquaint them with the menu commands necessary for use during the reformulation stage. On the other hand, the AI-enhanced Consecutive tools proposed by Fantinuoli (2023) and Ünlü (2022) are currently undergoing research and assessment, rendering it unviable to depend on them for training at the present time. Having provided a brief comparison between Microsoft Translator and the aforementioned methods, we would like to underscore the practical applications that such a tool can offer:

(i) Training with Real-Life Content: One of the primary benefits of using Microsoft Translator for consecutive interpretation training is its ability to work with real-life content. Educators can use news articles, TED Talks, interviews, and speeches in different languages, and have students interpret these materials in real-time. This approach provides students with exposure to authentic content, enhancing their language skills and cultural awareness.

(ii) Instant Language Support: The ability to quickly check words, phrases, or idiomatic expressions contributes to the development of language skills and aids in the comprehension of source language content.

(iii) Collaboration and Peer Learning: The tool supports collaboration by allowing multiple users to join an interpretation session. This feature can facilitate peer learning, as students can work together to interpret and compare their performance. It also encourages communication and teamwork among trainees.

(iv) Multilingual Practice: Microsoft Translator offers multiple languages, enabling trainees to practice interpretation between various language pairs. This enhances their adaptability as interpreters and broadens their horizons.

6 Addressing potential challenges and considerations

While Microsoft Translator offers various advantages for CI training, there are some challenges and considerations that trainers and educational institutions need to address and they should be aware of:

- *Limited Contextual Understanding:* While Microsoft Translator provides translations, it may not always capture the contextual nuances and cultural subtleties of

a conversation. Interpreters must be prepared to interpret not just words but the intentions, emotions, and cultural backgrounds of speakers.

- *Overreliance on Technology*: There is a risk that students may become overly reliant on the technology for translation, hindering their ability to develop independent interpreting skills. To mitigate this, trainers should balance technology use with traditional interpretation exercises. Trainers should strike a balance between technology-assisted learning and traditional teaching methods to encourage comprehensive language acquisition.

- *Privacy and Data Security*: Trainers should address privacy and data security concerns when using cloud-based translation tools in the classroom, particularly when working with sensitive content.

- *Cost and Accessibility*: Not all students may have access to devices or subscriptions required for using Microsoft Translator. Trainers should consider the financial implications and accessibility issues when implementing technology-based tools in the classroom.

- *Accuracy rate*: While the software supports multiple languages, it is important to note that the accuracy of both translation and transcription may vary between languages. Therefore, a comprehensive accuracy assessment for transcription and translation should be carried out in advance for the languages used in the training.

7 Conclusion

In conclusion, Microsoft Translator can be a valuable addition to the classroom for training consecutive interpretation skills. Its real-time translation capabilities, practice opportunities, and collaborative features make it a versatile tool for interpreting trainers and trainees. While there are clear benefits, there are also challenges related to technology dependence, contextual understanding, privacy, and accessibility that must be carefully considered. The effective use of technology in the classroom for interpretation training requires a balanced approach. Trainers must guide students in using technology as a helpful tool without sacrificing the development of fundamental interpretation skills.

It is noteworthy that the current approach is solely a training proposal. Consequently, further research and in-depth analysis are imperative to evaluate the tool's applicability in the classroom setting. Moreover, it is essential to conduct a comprehensive assessment of the accuracy rate of both transcription and translation for the languages used in the training, prior to implementation. Additionally, it should be acknowledged that the proposed tool has not been specifically designed for interpreters. Hence, the opinions and feedback of students hold paramount importance in the decision-making process regarding the adoption of such a tool.

By incorporating Microsoft Translator thoughtfully into the curriculum, educators can provide students with the tools and knowledge necessary to excel as interpreters in an increasingly interconnected and multilingual world. As technology continues to advance, its integration into interpreting training contexts will play an increasingly important role in preparing trainees for successful careers in interpretation and

language-related fields. Microsoft Translator is just one example of how technology can be harnessed for the benefit of both interpreting trainers and trainees.

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Wings and Words: Attempting to Use Computerized Transcription and Online Translation Tools in a Specialized Context.

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Abstract. To analyze the spoken English found within the international and intercultural community of hang glider pilots, as part of her PhD project, the author designed, conducted and recorded a series of one-on-one interviews to compile a corpus of non-academic, yet specialized, verbal English produced by a group of users of English as a second language. In this paper, the author provides insight on the use of computer-based transcription software to digitalize the recorded interviews, taking into account the presence of specialized vocabulary as well as the fact that the speakers had different accents, varying in intensity. She also extracts some of the data from the corpus to assess the plausible results using online translation tools when attempting to obtain the equivalent specialized and technical vocabulary in Spanish of several of the specialized terms found in the corpus.

Keywords: Corpus Linguistics, Computer-Based Transcription, English for Specific Purposes, Online Translation, Specialized Translation.

1 The Ongoing Research

This paper uses data extracted from the author's ongoing PhD project to consider the use of computer-based tools such as speech-to-text and translation software, focusing on two specific scenarios: a) the use of voice-to-text automated transcription for recordings containing specialized vocabulary and b) employing computer-based tools in a specialized, non-academic, context. At the same time, the author considers whether the presence of specialized and technical vocabulary will hinder the transcription process and whether some of the current online translation tools already include this kind of language in their databases.

The abovementioned project interconnects the fields of Translation Studies, Intercultural Mediation, English for Specific Purposes (ESP) as well as English as a Lingua Franca (ELF) and takes an in-depth look at the spoken English produced by members of the international hang gliding community who acquired English as a foreign or second language (L2), using it to communicate and interact within this community in diverse situations.

Hang gliding is a sport that also fosters a tight, active and cohesive community including members from different countries and, more importantly for our study, from different linguistic backgrounds. The members of this multicultural and active group meet year after year in multiple international events organized around the world and use English to communicate with other participants; the contexts range from sharing experiences to discussing technical matters.

The researcher was able to have access to the members of this group of people thanks to her participation in different layers of this community, including currently being an active competition pilot, a former event organizer and official of the International Federation as well as acting as a translator and cultural mediator during past world and continental championships.

With the purpose of analyzing this spoken language, the researcher conducted a series of recorded one-on-one interviews designed to elicit different kinds of speech registers, from technical and specialized discourse to general and evocative language.

In order to enhance the quality of the project and provide a suitable structure to her research, the author opted to follow a strict methodology incorporating elements from Corpus Linguistics, Ethnographic Research and Population Sampling. The first phase of the project was to select a clearly defined larger group of cases or people she would study – her ‘Target Population’ – [1] then identify a ‘Sampling Frame’ or the best approximation to a list of cases in the target population [1] from which she could achieve obtaining a ‘Sample’, a small collection of cases within the target population [2] that would provide the data to be processed and analyzed while being representative of the community itself. For this task, she accessed the official records of the International Aeronautical Federation (FAI – *Fédération Aéronautique Internationale / CIVL – Commission Internationale de Vol Libre*) [3], where she was able to access public archives containing information of the pilots from each of the different countries registered, allowing her to carry out the sample definition process. Next, the researcher proceeded to design the structured questions and then begin scheduling visits to several international events where she would conduct in-person interviews. The original proposal was to perform only face-to-face interviews; however, due to the COVID-19 pandemic, the researcher was compelled to shift from in-person interviews to virtual ones in order to complete her data-gathering phase and avoid being forced to cut this process short, ending up with fewer interviews than initially foreseen.

Despite the option of working directly with the recordings, bypassing the transcription phase [4], it was deemed more productive to use transcripts with the idea of creating a written corpus which could then be analyzed in depth. It is, in fact, from this analysis, that the researcher was able to look at the frequency lists to further examine the specialized vocabulary in relation to automated transcription and online translation tools in order to elaborate on this subject in this paper (see below).

Based on the content of the interviews, it seemed appropriate to catalog this corpus as a ‘specialized’ corpus of natural spoken English by L2 speakers. In addition, this content raised the question of which type of transcription to adopt; the main options were: automated and manual. In order to choose the best option, the author ran a series of tests (see section 2.2 below) which led to the conclusion that, in this case, performing a manual transcription of the interviews would be the best course of action.

Currently, the author is analyzing her corpus using a hybrid methodology, where she complements a manual analysis with the use of specialized corpus analysis tools, such as Sketch Engine [5]. Once the analysis is completed, she will proceed to finish writing her dissertation in order to defend her thesis.

2 Using Computer-Based Tools: Transcription and Translation

The Say-It Again 2023 event offers an interesting opportunity to present some of this data, containing elements of specialized language produced by English speakers with diverse linguistic backgrounds while correlating it to the transcription and translation processes. Mining information from frequency lists from her corpus reveals a wealth of data for this purpose.

2.1 Online Translation of Specialized Vocabulary

The corpus derived from this study contains a fair amount of specialized language. While some of it is specific to hang gliding only, there are also a number of examples of vocabulary that also apply to related fields such as general and recreational aviation. For this section of the paper, the author accessed two different frequency lists of her corpus, generated by Sketch Engine: Nouns and Verbs. The author selected the top ranking most relevant (specialized) terms to examine, using five different online machine translation tools (in alphabetical order), in their English-Spanish configuration: DeepL [6], eTranslation [7] Google Translate [8], ImTranslator [9] and Systran [10].

As expected by the author, there were less specialized lemmas under the verb category; therefore, the selection used to illustrate our point includes a higher number of nouns (10) than verbs (2). Furthermore, the author included the nouns derived from the verbs (2) as well as the full form of a noun which appears more commonly in its abbreviated form (see below: ‘vario’ and ‘variometer’), as a complementary search, for a total of 15 words. These terms and their brief definitions [11][12][13][14] are listed in alphabetical order:

- To aerotow (vb): to launch using a specific method where the pilot and hang glider are attached by a rope to the back of an ultralight plane; the aircraft tows the pilot into the sky.
 - Aerotow (n): a launch performed using this method (see above).
- A-Frame (n): triangular frame used by the pilot to control the glider. Also known as the ‘control frame’; it consists of two ‘downtubes’ connected by a ‘basetube’ or ‘speedbar’.
- Batten (n): rigid, thin curved piece of tube that is inserted into the sail; these assist in creating and defining the airfoil of the hang glider’s sail.
- Downtube (n): angled vertical tubes (2) that form the sides of the ‘A-frame’ or ‘control frame’.
- Hang Glider (n): a kitelike glider from which a harnessed rider hangs while gliding.

- Harness (n): suspension system connecting the pilot to the hang glider, allowing the pilot to steer with the use of the ‘A-frame’.
- Keel (n): the main longitudinal structure (tube) supporting the sail from which the pilot hangs in the harness.
- Speedbar (n): Horizontal tube of the ‘A-frame’. Specially curved base tube that allows the pilot to steer the hang glider. The ‘speedbar’ enhances comfort and speed, when compared with a straight ‘control bar’.
- To thermal (vb): flying in tight circles to stay inside the column of rising air.
 - Thermal (n): a bubble or column of warm rising air that provides lift; it is used by pilots to gain altitude and stay in the air as long as possible.
- Turnpoint (n): a point designated by competition directors that pilots must navigate to complete a task (route).
- Vario (n): Common abbreviation of ‘variometer’ (see below).
 - Variometer (n): flight instrument used to help pilots find and stay in thermals. It measures the vertical speed of sink or climb.
- Waypoint (n): synonym of turnpoint (see above).

The following table presents the results obtained after plugging each individual word into the five different machine translation sites (asterisks denote unsuitable and/or inaccurate translations):

Table 1. Translations obtained using five different translating websites.

English word ≡ Spanish equivalent(s)	DeepL	eTranslation	Google Translate	ImTranslator	Systran
A-frame (n) ≡ <i>triángulo</i>	<i>Marco en A*</i>	<i>Marco A*</i>	<i>Un cuadro*</i>	<i>A-marco*</i>	<i>Bastidor A*</i>
To aerotow (vb)	<i>Para aerotow*</i>	<i>Aerotow*</i>	<i>Remolcar</i>	<i>A aerotow*</i>	<i>A aerotow*</i>
≡ <i>remolcar, arrastrar</i> Aerotow (n)	<i>Aerotow*</i>	<i>Aerotow*</i>	<i>Remolque aéreo*</i>	<i>Aerotow*</i>	<i>Aerotow*</i>
≡ <i>remolque or arrastre con trike/dragonfly, Batten</i> (n)	<i>Sable</i>	<i>Batten*</i>	<i>Listón, varal*</i>	<i>Listón*</i>	<i>Listón*</i>
≡ <i>sable, costilla, ballena</i> Downtube (n)	<i>Tubo diagonal*</i>	<i>Tubo descendente*</i>	<i>Tubo inferior*</i>	<i>Downtube*</i>	<i>Tubo de bajada*</i>
≡ <i>montante, lateral</i>					

English word ≡ Spanish equivalent(s)	DeepL	eTranslation	Google Translate	ImTranslator	Systran
Hang glider					
≡ <i>ala delta, cometa, ícaro, papalote</i> Harness (n)	<i>Ala delta</i>	<i>Planeador de colgar*</i>	<i>Ala delta</i>	<i>Alas-delta* (pl)</i>	<i>Ala delta</i>
≡ <i>arnés</i> Keel (n)	<i>Arnés</i>	<i>Arnés</i>	<i>Arneses (pl)</i>	<i>Guarniciones*</i>	<i>Arnés</i>
≡ <i>quilla</i> Speedbar (n)	<i>Quilla</i>	<i>Quilla</i>	<i>Quilla</i>	<i>Quilla</i>	<i>Quilla</i>
≡ <i>speedbar</i> (same)	<i>Speedbar (?)</i>	<i>Barra de velocidad*</i>	<i>Barra de velocidad*</i>	<i>Speedbar (?)</i>	<i>Barra de velocidad*</i>
To thermal (vb)					
≡ <i>termlear, termiquear</i> Thermal (n)	<i>A térmica*</i>	<i>A la térmica*</i>	<i>A termal*</i>	<i>A termal*</i>	<i>A térmica*</i>
≡ <i>térmica, termal</i> Turnpoint	<i>Térmico*</i>	<i>Termal (?)</i>	<i>Térmica (?)</i>	<i>Termal (?)</i>	<i>Térmico*</i>
≡ <i>baliza, boya</i> Vario (n – abbr.)	<i>Punto de giro*</i>	<i>Punto de giro*</i>	<i>Punto de giro*</i>	<i>Turnpoint*</i>	<i>Punto de cruce*</i>
≡ <i>vario</i> Variometer (n)	<i>Vario (?)</i>	<i>Vario (?)</i>	<i>Vario (?)</i>	<i>Vario (?)</i>	<i>Vario (?)</i>
≡ <i>variómetro</i> Waypoint	<i>Variómetro</i>	<i>Variómetro</i>	<i>Variómetro</i>	<i>Variómetro</i>	<i>Variómetro</i>
≡ <i>baliza, boya</i>	<i>Waypoint*</i>	<i>Waypoint*</i>	<i>Punto de ruta*</i>	<i>Waypoint*</i>	<i>Punto de referencia*</i>

From table 1 it is possible to assess different groups of translations. For instance, there are only 2 terms (keel and variometer) for which all five sites provided a translation that is found in the Spanish specialized language. There is another set of expressions (A-frame, aerotow, downtube, to thermal, turnpoint and waypoint) where none of the five sites actually offered an equivalent used in the Spanish technical vocabulary (marked with a star). For the next 2 words (vario and thermal), we obtained mixed results. On the one hand we found some translations that matched the spelling of the word used in Spanish; however, the website presented a context that was not related to hang gliding or aviation (denoted by a question mark) such as *vario*, which is presented in the context of ‘varied’ and *térmica* related to ‘temperature’. On the other hand, for

'thermal' two sites offered *térmico*, which may be used as an adjective in this specialized context, but not as a noun. The last group (to aerotow, batten, hang glider, harness and speedbar), presents diverse results, but at least one website did provide an equivalent used in Spanish. Moreover, some of these translations are very close, yet offered either only the plural version of the word (marked with 'pl.')

as in *arneses* or the plural plus a hyphenation, in *alas-delta*, which is not used in Spanish. However, in the case of 'speedbar', where Spanish speakers borrow the term from the English language, the author was not able to determine the source of the translation provided by the 2 websites that used 'speedbar'. Was it the result of actually having this term in their database or, on the contrary, was it due to the absence of data that the output was the same term as the input?

As a follow up, the author selected several sentences from her corpus which contained different words that did not yield suitable equivalents, and attempted to translate these sentences using the same online translation tools. Her aim was to corroborate whether including the context would result in a different outcome. Each time, the word in question was translated either in the same way or in a similar, yet unfit manner, whether in context or not.

2.2 Computer-Based Transcription

In this section we will look at three different tests carried out using Google Docs voice typing, in order to verify how accurately a transcription software could transcribe these oral texts. The author first used the interview recording of one of the native French speakers (S-Fr) who has a relatively strong accent, then a native English speaker (S-En) reads these same answers directly into her computer's microphone and lastly, she also used the recording of one of the native German speakers (S-Gr) who only has a very mild accent.

Overall, this system proved to be quite inaccurate in all three instances. Besides the significant number of utterances and phrases omitted and provided transcriptions which were completely off, these digitalized texts didn't really make any sense, rendering them practically unintelligible. Some relevant examples are included in table 2 below:

Table 2. Discrepancies between oral text and computer-based transcript.

Word or phrase uttered by speaker	Automated Transcription(s)
Air	Hair (S-Fr) Year (S-Gr)
A thermal	Assemble (S-Gr)
Hang glider	Lightning McQueen (S-Fr)
Hang gliding	10 guiding (S-En)
Parachute	Power suit (S-Gr)
Variometer	Valium 80 (S-En)
Waypoint	Vipond (S-Gr)

Word or phrase uttered by speaker	Automated Transcription(s)
The wind	The witness (S-Fr)
Wind	Win (S-Fr) Swing (S-Fr)
Maybe just to fly in the mountain [sic] in uh Chamonix	Lady Justice lie in the month of May in shamoni (S-Fr)
I was towed by a [sic] ultralight	I was told by a tree light (S-Gr)

Some researchers state that transcription software is not yet capable of converting oral text into written text with enough precision [15]. From this second table it is possible to get an idea of how divergent the automatic transcripts ended up being. Moreover, when the automated transcripts were compared to the manual ones, the S-Gr automated transcript contained 13% fewer words and the S-Fr one 35%. As expected, the recording of the S-Fr interview was more problematic than that of the S-Gr and the S-En presented the least number of issues; nevertheless, that transcript did not meet the accuracy required by the author for her project either.

3 Conclusions

It is well-known that computerized tools are in constant development and improvement and that, without a doubt they represent a great advantage, enhancing tasks at hand such as transcription and translation. Nevertheless, after a deeper look at the specialized and specific data extracted from this PhD research project, it is possible to say that there seem to be certain areas, most likely those regarding technical and specialized vocabulary, that need to be revised, further integrated or updated.

Regarding the online translation, it is relevant to note that, in the case of the Spanish language not only in specialized contexts but in general, there are many varieties. Hang gliding is not an exception and there are several instances where one word in English can have several different equivalences in Spanish. One example is the word 'hang glider' itself, which is widely known as '*ala delta*'; however, in Colombia it is also known as a '*cometa*', in Guatemala a '*planeador*', in Mexico a '*papalote*' and in Venezuela an '*lcaro*'. This fact poses a level of complexity for translation purposes.

By trying out different electronic tools for the translation task, our objective was not to rate them or compare these different tools against one other. On the contrary, the aim was to gather diverse information to attempt highlighting current shortcomings of these systems and maybe provide data that could help mitigate the lack of material in this specific field of recreational aviation. At the same time, try to provide information that could either result useful to other researchers, transcribers and translators or arouse their interest in this kind of research.

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Court and Police Interpreters in the Digital Era: How does Technology Shape their Workflow?¹

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Abstract. The irruption of technology into our lives has been an almost imminent event in recent years. The technological advances to date are the reflection of a reality that we already predicted barely 10 years ago and that, on many occasions, we awaited with great interest and enthusiasm. Therefore, today, we can affirm that technology has come to stay with us and to produce great advances in society. This work shows, through a survey aimed at interpreting professionals, what perception the court and police interpreter has about interpreting technologies in the digital era and to what extent they use them.

Keywords: Court & Police Interpreting, Technologies, Digital Era.

1 Introduction

Technology has burst into our lives almost imminently. Its rapid expansion is reflected in many fields of knowledge. In particular, and in the field that concerns us, linguistic technologies have caused a quasi-automation of the translating and interpreting processes, albeit far from leaving aside the language professional.

As far as translation is concerned, it has benefited (and will continue to benefit) from the huge impact of information and communication technologies (hereafter, ICT). However, it is taken for granted that in the field of interpreting, technology has not emerged (yet) with the expected development and interest and interpreters still don't have benefited from those interpreting e-tools at their disposal (Costa, Corpas Pastor & Durán Muñoz, 2014) given that the way interpreting is done today is very similar to what it was a few decades ago (Fantinuoli, 2018a). However, it is true that, for some years now, these so-called CAI tools have been taking on a new appearance and are being transferred to the field of interpreting. Alongside these tools, and according to Corpas Pastor (2018), remote interpreting and automatic interpreting predict a very promising future in terms of interpreting technologies.

With regard to the field in which we want to look at the impact of language technologies, court interpreting (especially in the criminal field) and police interpreting has been gaining ground over the last twenty years. Covered by European and national

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legislation, this form of interpreting in public services is one of the widest-ranging and most challenging fields of activity for professional interpreters (Baigorri Jalón & Russo, 2015). Despite several attempts to regulate this activity, there are still loopholes in the industry, starting with a lack of recognition of the social value of interpreting services (Mikkelsen, 2004), which creates inconsistencies in the interpreter-service provision in Spanish criminal proceedings (Abril Martí, 2006; Ortega Herráez, 2006) and which leads to a lack of an official code of ethics or protocol for court interpreters (Hunt-Gómez & Gómez Moreno, 2015). If we add to this situation the fact that court and police interpreting takes place in a highly specialised atmosphere, driven by an endless flow of legal and court documentation, characterised by culture-embedded legal terms (Sandrini, 1996) and the translatability versus untranslatability of legal discourse (Cao, 2007; Kjaer, 2007), we turn what is actually an humanitarian aid work into a difficult, challenging interpretative process, with no opportunity, on many occasions, to ensure a fair trial.

Therefore, in this paper we will examine the importance given by professional interpreters to technology during their work in court and police stations by means of a survey designed for this purpose, which gathers, as we will see below, a large amount of information aimed at establishing an overall opinion on the use of ICT in the field of court and police interpreting.

2 Interpreting Technologies: A Brief Overview

Since interpreting became professionalised at the beginning of the 20th century, technological resources have developed by leaps and bounds. This technological advance has made it possible, for example, to geographically interconnect interpreter and client and has made it unnecessary to travel to the place where the service is to be provided (Andres & Falk, 2009, *apud* Gaber & Corpas Pastor, 2020). We attribute all this to the computer and the multitude of dedicated software for videoconferencing (e.g., Skype, Google Meet, Microsoft Teams...) or through cloud services (Donovan, 2017). We therefore refer to this modality as *distance interpreting* or *technology-mediated interpreting*, although these are not the only “labels” it has been given in the course of its study, depending on the channel used by a professional to provide a service and on the situation of either clients or professionals. On the one hand, remote interpreting, i.e., to “facilitate access via telephone/audio or video link to a remotely located interpreter or team of interpreters by clients who are together at one site” (Braun, 2019) provided via a mobile device will be called *telephone interpreting*, *over-the-phone interpreting*, or *telephonic interpreting* (Kelly, 2007) if the clients are at two or more sites or *telephone remote interpreting* if the clients are at one site and interpreters are located at separate sites (Braun, 2019). On the other hand, but in the same way, for distance interpreting involving two channels, i.e., image and sound, we would speak of *videoconference interpreting* if the clients are at two or more sites or *video remote interpreting* if the clients are at one site and interpreters are located at separate sites (*ibid.*). Let’s have a look at the figure below to better understand the mentioned classification:

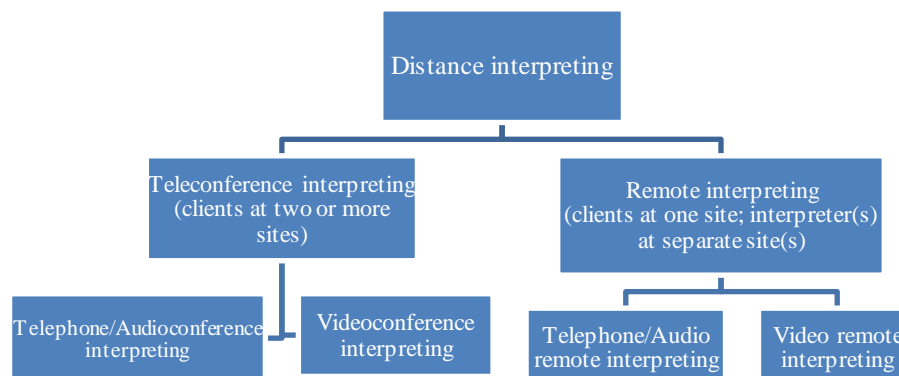


Fig. 1. Participant distribution in distance interpreting (Braun, 2019)

When it comes to on-site interpreting, technology has also gained a strong position in the field and, together with translation, tools very similar to those used in this type of linguistic mediation like CAT tools, but aimed at interpreting (CAI tools), have emerged, although in a much more slowly way. However, as Fantinuoli (2016) points out, the number of tools of this type is scarce, although, in recent years, interest in them has increased even further. Additionally, corpus-based resources can also provide stimulating materials for students (Bale, 2013) and a good performance for professionals (Xu, 2018). However, these tools are not risk-free despite all the benefits for the interpreter. According to Corpas Pastor (2021: 95), the specific tools for terminology searching are, in particular, “time-consuming and distracting for interpreters while they are performing an activity that requires concentration and rapid information processing”. Even so, with the advent of artificial intelligence (hereafter, AI), CAI tools already represent a major breakthrough in the study of interpreting technologies, as evidenced by the many tools available to the user such as VIP².

Last but not least, Automatic Speech Recognition (ASR) is another technological resource that, although it has not been well integrated into the interpreter’s workflow (Gaber, Corpas Pastor & Omer, 2020), it is already beginning to be the biggest breakthrough ever made in the field of interpreting technologies. These systems, on which machine interpreting is based, “are independent, machine-based process of decoding and transcribing oral speech. A typical ASR system receives acoustic input from a speaker through a microphone, analyses it using some pattern, model, or algorithm, and produces an output, usually in the form of a text.” (Lai, Karat & Yankelovich, 2008, *apud* Levis & Suvorov, 2012). Several projects are currently being carried out one of the major ASR services is Interpretbank ASR³, based on the AI-based tool for interpreters Interpretbank.

In this section we have seen, very concisely, how interpreting technologies, although not yet on a par with those of translation and not yet available (and affordable) to the

² Available at: http://www.lexytrad.es/VIP/index_en.php.

³ Available at: <https://www.interpretbank.com/ASR>.

majority of the community of interpreting professionals, are automating many processes and are a very encouraging future for the profession, although they are still far from being able to replace the work of the interpreter. Similarly, from an academic point of view, research interest continues to be very active, as evidenced by the publications devoted to the study of interpreting technologies (e.g., Russo, Bendazzoli & Defrancq, 2018; Fantinuoli, 2018b; Corpas Pastor & Defrancq, 2023, etc.).

3 The survey

For the design and subsequent distribution of the survey, we have based ourselves on the model of Corpas and Fern (2016). The questions are divided into three sections as shown in the following table:

Table 1. Survey Sections

Section	Group of Questions	Questions
First Section	Personal Information	Age Gender Country of Origin Mother Tongue(s) Working Language(s) and Their Level(s)
Second Section	Professional Information	Academic Qualifications Years of court/police interpreting experience Modality Types of interpreting
Third Section	Use of Technology	All questions related to the use of technology tools and resources

The survey was distributed to APTIJ⁴ members and other practitioners of court and police interpreting. A total of 37 responses were obtained and the demography of the respondents is as follows:

Table 2. Demography of the Respondents

Section	Responses												
Age	21-30			31-40			41-50			51-60		+60	
	[12]			[9]			[10]			[5]		[1]	
Gender	Female						Male						
	[26]						[11]						
Country of Origin	ES	HU	IT	MA	NI	US	AR	DE	PL	DZ	UK	CN	GE
	[21]	[1]	[3]	[1]	[1]	[2]	[1]	[2]	[1]	[1]	[1]	[1]	[1]
Years of Experience	0-10				11-20				21-30				
	[29]				[4]				[4]				

⁴ APTIJ stands for *Asociación Profesional de Traductores e Intérpretes Judiciales y Jurados*.

English is the majority working L1 (43.2%), followed by Spanish (27%) and French (13.5%). With regard to the working L2, English is still predominant (29.7%), although the percentages are more distributed than in L1: French (24.3%), Spanish (13.5%) and German (10.8%). Of course, there are many other working languages such as Arabic, Italian, Dutch, Polish, Georgian, etc., although their contribution to the total is less than 25%. The level according to CEFR of both L1 and L2 is, as expected, between C1 and C2, although some respondents only have an A1 and B2 level both in L1 and an A1, A2 and B2 level in L2:

L1:

- A1: 5,6%
- B2: 2.8%
- C1: 19.4%
- C2: 72.2%

L2:

- A1: 5,7%
- A2: 2,9%
- B2: 20%
- C1: 31.4%
- C2: 40%

Regarding the modality, 23 interpreters are freelance and work for agencies, while 13 of the professionals are freelance, but do not work for agencies. Only 7 of 35 people are in-house interpreters. Consecutive and liaison interpreting are the most performed type of interpreting by professionals (70.3% & 64.9%, respectively), closely followed by simultaneous and remote interpreting (48.6% and 45.9%). Sight interpreting, frequently demanded at court hearings, only represents the 21.6%.

We now reach probably the most important stage in any interpretative process: the documentation. 51.4% of respondents spend less than 1 hour preparing an order, while 32.4% spend between 1 and 3 hours. Those who spend more than 4-5 hours are 10.8% and only 5.4% spend more than 5 hours.

On the technology level, the majority of respondents spend between 1-5 hours on technology in their daily lives (45.9%), while the rest spend 6-12 hours (37.8%). Few are those who spend either too little time on technology (less than 1 hour, 10.8%) or, in our opinion, too much time (more than 12 hours, 5.4%). In the same sense, almost 90% of respondents consider technology for the field of interpreting to be relevant (43.2%) or very relevant (40.5%). The remaining percentage of respondents do not see technology as beneficial to the sector (16.2%).

Once in the field of interpreting technologies, 62.2% are aware of technologies that can be used in the sector, while 37.8% are not up to date with technological innovations in the field of interpreting. However, although the percentage of knowledge is significantly higher, their use decreases in proportion to the type of tool they are using. The gap between the use and non-use of translation memories is invisible, with 48.6% using them in their daily work, while 51.4% do not use them. The percentage of corpora use is, unexpectedly, much lower (only 8.1% of respondents use corpora). This is almost certainly due to the limited time these interpreters have to prepare the assignments or,

in the case of parallel corpora, to the difficulty of finding legal documents, given the highly privatised nature of the sector.

With these results and taking a look at the most used resources by these professionals, what we get is almost a glimpse into the past. General language dictionaries (both bilingual and monolingual) continue to be the most used (86.5%), followed by specialised language dictionaries, both bilingual and monolingual (67.6%) and closely followed by legal databases and expert consultation (both 56.8%), and forum enquiries (37.8%). None of the respondents use machine interpreting and only 10.8% use CAI tools. It is also curious to note that only one of them leaves his/her work in the hands of AI (ChatGPT).

Finally, respondents were asked the million-dollar question: Will technology fully replace interpreters? 48.6% mentioned that technology will not replace the professional at all, while 45.9% said that it could be a possibility, but they weren't sure. Only 2 professionals (5.4%) see technology as a threat to the interpreter's professional future.

4 Conclusions

With the results obtained from the survey and with the huge advances that are being made in the field of interpreting technologies, we observe that the professional, despite his or her knowledge of the sector's technologies, is still far from a more prolonged and effective use of them. The problem may not lie in the efforts (which are not few) that are being made precisely to make technology an ally rather than an enemy in our day-to-day work, but in the lack of time available to interpreters to prepare an assignment or the financial solvency to afford training and resources of this type. However, the speed at which technology is advancing often does not give us the option to invest or to put it aside and continue with the resources of a lifetime.

In the last years, we have seen how not only translation, but also interpreting has been "invaded" by the new technologies. AI is perhaps the last link in the chain of this "invasion" and, unsurprisingly, it is the trigger for all the technology at our disposal to shake the foundations of a sector that was still rudimentary until a few years ago.

In the not-too-distant future, as has happened in many aspects of our daily lives, the interpreter will have to open up to this technological world, a fact that is already here and that we cannot ignore. Not jumping on the technology bandwagon means taking a step backwards, falling back into monotony and taking this profession back to its beginnings, thus impeding its progress.

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Miracle Workers or Mission Impossible:

Interpreting the Manner of Speech in Technology-Enabled Remote Court Hearings in Australia

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Abstract. This short article intends to inform readers of a long-overlooked aspect of interpreting in technology-enabled virtual court proceedings. It affirms that an adequate and accurate language interpretation in court is not merely a rights issue, pertaining to procedural equity and social justice for linguistically and culturally diverse participants, but also a moral imperative linking to professional ethics. However, comparing with the content of the utterances, the manner in which the propositional content is (re)produced and (re)presented through an interpreter remains under-explored. This article aims to (1) increase the awareness of the Manner of Speech as equally important aspect of language interpretation in court; (2) improve interprofessional understanding and collaboration between interpreting service users and providers; and (3) compass future manner-related pedagogies in interpreter education.

Keywords: Audiovisual Link Technologies, Videoconference Hearings, Manner of Speech, Accuracy, Remote Interpreting, Court Interpreting, Procedural Fairness, Linguistic Equity, Human Rights for Migrants.

1 Introduction

1.1 Audiovisual Link Technologies and Videoconference Hearings

Research has revealed that millions of dollars have been allocated to the implementation of audiovisual (AVL) technologies, videoconference technologies and other litigation technologies in most jurisdictions in Australia.¹ As early as the 1920s, the use of AVL technologies in Australian courts was informed by a series of legislations adopted by Australian states and territories for affected children on trials in remote locations.² The covid-19 has accelerated the use of

¹ See R.Smith, R.Savage & C.Emami, Benchmarking the Use of Audiovisual Link Technologies. Australian Government Institute of Criminology, 2021. Retrieved from <<https://www.aic.gov.au/publications/rr/rr23>>. [Accessed 23 Feb 2023]

² Australia consists of six states and two self-governing territories, with federal and state justice systems. See Parliament of Australia, Factsheet 20 - The Australian System of Government. Retrieved from <https://www.aph.gov.au/About_Parliament/House_of_Representatives/Powers_practice_and_procedure/00 - Infosheets/Infosheet 20 - The Australian system of government>. [Accessed 23 Feb 2023]

AVL and videoconferencing technologies in court. In virtual courtrooms, the issue of presence has been highlighted by many scholars when comparing the remote with face-to-face proceedings.³ Differences exist in four main aspects: (1) eye contact, (2) audio quality, (3) video quality, and (4) interactional cues. In remote trials, eye contact and interactional cues are often simulated through camera-captured images, depending on the audio and video quality. A study revealed that 93% of the meaning of testimony delivered via videoconferencing is distorted or misrepresented due to poor audio and video quality.⁴ The poor audio/video quality may (1) flatten the speaker's affect, (2) shift the subtle changes in tone of voice, (3) impair the prosecutors in assessing credibility, and (4) implicate the way judges and jurors evaluate the cues. As long as virtual courtrooms remain a feature of the justice system, it is important to examine the use of AVL technologies and videoconferencing trials and its impact on procedural equity in the justice system, particularly in interpreter-mediated proceedings.

1.2 Remote Interpreting in Virtual Courtrooms

Numerous literature has problematised court interpreting and necessitated the policy governing the quality of interpreting in institutionalised court proceedings (see References 18 and 19). Remote interpreting refers to the use of technology-assisted interpreting services when the speakers are not co-located. Remote interpreting can be further categorised by the mode, the condition, and the user group. By mode of interpreting, remote interpreting services can be either used simultaneously or consecutively. The consecutive mode of interpreting is considered the default mode of interpreting to meet high requirements for accuracy during examination-in-chief and cross-examination in high-stake cases, whereas the simultaneous mode of interpreting, namely whisper or chuchotage, is limited to informal conversations between clients and counsels and monologues during court deliberations. By condition of interpreting, remote interpreters either interpret via audio link without the presence of visual cues or via video link with the display of camera video in courts. By user groups, remote language interpretation can be used either for spoken languages or sign language. During remote language interpretation, court interpreters resorted to videoconferencing platforms with interpreting features (e.g. Zoom, Microsoft Teams, Jabber, Webex) and other dedicated platforms (e.g. Interprefy) to provide services in varied modes and conditions of interpreting for spoken or sign language users. Compared with face-to-face settings, remote interpreting has brought many practical difficulties for court interpreters to achieve accuracy.

1.3 Accuracy of Interpreting in Remote Court Hearings

A convincing body of empirical literature (see References 1, 3, 4, 5, 8) has supported that accuracy of court interpreting in remote settings is important for a fair trial. The need for sufficient interpreting has become an integral part of the government's judicial diversity, cultural inclusion, and social equity policies in a linguistically and culturally diverse country like Australia. Australia is a common-law country. Most of its courts operate under the adversarial system. Existing literature (see References 6, 23) has ascertained that lawyer questions are found to serve strategic purposes to present a more favourable version of facts for their desirable judicial outcomes.⁵ In adversarial courtroom examinations, the attorney on each side is responsible for ensuring that the jury or the bench can accept the presented version of the facts. The power embedded in the language used can be more nuanced when an interpreter is engaged during court proceedings. Evidence represented and reproduced by the interpreter has many implications for

³ See L.Rossner & D. Tait, Presence and Participation in a Virtual Court. *Criminology & Criminal Justice* 23(1) pp. 135-157. DOI: <https://doi.org/10.1177/17488958211017372>

⁴ See F. M.Walsh & E. M.Walsh, Effective Processing or Assembly-Line Justice: The Use of Teleconferencing in Asylum Removal Hearings. *Geo. Immigr. LJ.* 22 pp. 259-284.

⁵ See L.M. Solan, The Forensic Linguist: The Expert Linguist Meets the Adversarial System, in: L.M. Solan (ed.), *The Routledge Handbook of Forensic Linguistics*, Routledge, London 2010, pp. 423-436.

procedural fairness. A study has linked the appeals to misinterpretations and procedural inappropriateness. These misinterpretations and procedural inappropriateness encompass (1) wrongful use of slang, (2) legal terminological inaccuracies and questioning errors, (3) occasional lapses from word-for-word translation, (4) embellishing or summarising live testimony, (5) the use of the uncertified interpreter, (6) failure to administer an oath to the interpreter, (7) engaging interpreters with different dialects, and (8) misrepresentation of emotions, passions, and non-verbal communication cues.⁶ Therefore, it is essential to examine both the content and the manner in virtual courtrooms and remote interpreting settings.

2 Conceptualising the Manner of Speech

2.1 The Manner of Speech: A Working Definition

The concept of Manner of Speech is multifaceted and fluid. It is, therefore, widely contested and critiqued by scholars for its broad and often inconsistent meaning. Based on a review of cognitive-pragmatic approach to discourse analytical studies (see References 21, 22), the following working definition is proposed:

"The manner of speech refers to the manner in which the propositional content of the utterances is produced and presented by the speaker in the context of a courtroom for a particular purpose and reproduced and represented through an interpreter. It can encompass a variety of heterogeneous features. These features include (1) discourse markers, (2) speech style, and (3) other manner-related contextual or interactional cues."

Manner of Speech serves various functions due to the indexicalities. Theories and practice-informed research have shown that manner-related features are indicative of multiple socio-psychological traits and cognitive processes of the speaker, the hearer, or the interpreter. Theoretical bases in support of this finding include Sperber and Wilson's Relevance Theory, Grice's Manner Maxim, and Searle and Vanderveken's Speech Acts Theory. The manner in which speakers speak is found to be linked to individual linguistic choice, unconscious habits, identity, and personality. This article proposes an analytical framework that can be further applied, with a particular focus on the Mandarin and English language combination (see Table 1).

Table 1. Analytical Models for Manner of Speech (Mandarin and English)

Categories	Sub-categories	Relevant literature
Discourse markers	1.1 Acknowledgment markers.	Schiffirin (1987)
	1.2 Politeness markers.	Brown & Levinson (1987)
	1.3 Particle markers.	Heritage (1990); Jiang (2016)
Speech style	2.1 Hesitations.	Wang (2021)
	2.2 Fillers.	Dayter (2021); Liu & Xiao (2009)
	2.3 Hedges.	Hu (2022); Magnifico & Defrancq (2017)
	2.4 Self-corrections.	Levelt (1983); Tseng (2006)

⁶ See V. Benmaman, Interpreter Issues on Appeal. *Proteus* 9(4) pp.1-9

Other features	3.1 Intonation.	Levis (1999); Lynch (2021); Yuan (2004)
	3.2 Tone of voice.	Yip (2002)
	3.3 Register.	Gibbons & Whiteley (2018)

2.2 The Importance and Difficulties in Reproducing the Manner of Speech

Existing studies have asserted the importance of preserving markers, speech style, and manner-related features. In practice, reproducing the Manner of Speech intended or implied by the original speaker into the equivalent form with matching force and effect in another language can be rather difficult, particularly in cross-lingual and cross-cultural transfers. This article provides three possible explanations for such difficulties: (1) versatile interpretations of the indexicalities of manner-related features; (2) these features seem less observable, compared with a whole chunk of content-intensive speech marked by legal arguments, facts, and sources of law in courtroom examinations; and (3) manner-related features seem to be less substantive to the case. To put it simply for general readers, Manner of Speech can mean different things to different people and members of socio-cultural groups and language communities with varied expectations of institutional culture and traditions.

However, given the importance of an accurately interpreted evidence, this article highlights two main implications of misrepresented Manner of Speech in virtual courts: (1) linguistic equity, procedural fairness, and public integrity (see References 2, 20), globally (see Reference 15) and nationally (see Reference 17) and (2) social incorporation for migrants in multicultural host societies, particularly for migrant children from Global South (see References 10, 11, 13). This article thus establishes three counter-claims: (1) the Manner of Speech is equally important as the propositional content of the utterances, as reflected in professional guidelines, interpreting protocols, and judicial practice notes reviewed in earlier part of this article; (2) not rendering the Manner of Speech may have implications for the judicial outcome of the case in many ways, as found in previous studies (see References 1, 3, 4); and (3) Manner of Speech is observable, it is manifested through the use of multiple devices, including acknowledgement markers (e.g. well/好的), politeness markers (e.g. please/请), and rapport building devices and contextual or interactional cues. Therefore, it is very important to (1) increase the awareness of the Manner of Speech in interpreter-mediated court interactions, (2) improve inter-professional understanding and collaboration rooted in mutual purpose and shared expectations, and (3) develop manner-related pedagogical resources in interpreter education (see References 7, 14, 16).

3 Conclusion

This short article sheds light on a long-overlooked aspect of interpreting in technology-enabled virtual court proceedings. In court interpreting, what is said and how it is said are equally important. Based a review of literature, a working definition of the Manner of Speech has been proposed, together with an analytical model to guide future empirical studies. This article affirms that an adequate and accurate language interpretation in court is not merely a rights issue, pertaining to procedural equity and social justice for linguistically and culturally diverse participants, but also a moral imperative linking to professional ethics. This article aims to (1) increase the awareness of the Manner of Speech as equally important aspect of language interpretation in

court; (2) improve interprofessional understanding and collaboration between interpreting service users and providers; and (3) compass future manner-related pedagogies in interpreter education.

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