

Document downloaded from the institutional repository of the University of Alcalá: <http://dspace.uah.es/dspace/>

This is an Author's final version of the following published document:

SÁNCHEZ RAMOS, María del Mar; "Public service interpreting and translation training: a path towards digital adaptation to machine translation and post-editing". (ISSN: 1750-399X). The Interpreter and Translator Trainer. 2022, vol 16 , num 3 , p. 294 – 308

©The Interpreter and Translator Trainer

(Article begins on next page)



This work is licensed under a
Creative Commons Attribution-NonCommercial-NoDerivatives
4.0 International License.

The Version of Record of this manuscript has been published and is available in The Interpreter and Translator Trainer, 16:3, 294-308, 10 August 2022, <https://www.tandfonline.com/>, DOI: 10.1080/1750399X.2022.2092829

Public service interpreting and translation training: a path towards digital adaptation to machine translation and post-editing

María del Mar Sánchez Ramos

Department of Modern Philology, University of Alcalá, Alcalá de Henares, Spain.

Email: mar.sanchezr@uah.es

Orcid: 0000-0001-5684-1552

Abstract

The ever-increasing demand for immediate access to information means interpreters and translators are increasingly using, and relying on, digital technology in their work. In the migratory context, machine translation (MT) and post-editing (PE) have the potential to greatly increase the efficiency of public service interpreting and translation (PSIT), which is currently experiencing huge demand. This article describes and evaluates the implementation of a module focused on MT and PE within a postgraduate PSIT programme at a Spanish university. A mixed-methods methodology was used to collect both quantitative data (via a questionnaire) and qualitative data (via a reflective essay) from a group of 42 students during the 2020–2021 academic year. The results show that students were satisfied overall with both the content of the module and its implementation. However, they also felt that the module needed to be better integrated within the postgraduate PSIT programme as a whole in order to fully prepare them for their professional careers.

Keywords public service interpreting and translation; machine translation, post-editing; translation technology, postgraduate training

1. Introduction

In recent decades, multilingual communication has been dramatically changed by globalisation, the advent of automated processes, and migratory flows. In the case of Spain, recent migratory flow patterns have greatly increased the need for mediation and intercultural communication, and specifically public service interpreting and translation (PSIT) (Valero-Garcés, 2019). It can be observed in the high demand of interpreters and translators required by non-government organizations (NGOs) in the last years due to the increasing migratory patterns and emergency situations (e.g., refugee crisis) (Sánchez Ramos and Rico, 2020). Spanish institutions and public administrations are dependent on the services of professionals such as translators, interpreters, or linguistic and cultural mediators with an adequate level of training to guarantee access to public services for those users who are not fluent in the country's official languages. The different translator training programmes, which also includes public service interpreting and translation (PSIT), have been evolving and adapting to new technological concerns. Such is the case of machine translation (MT) and post-editing (PE), whose rise is due to the fact that access to information and communication is immediate and solutions are needed to be adapted to these current needs (Guerberof and Moorkens 2019). Therefore, it is safe to think that the adaptation of higher education to this technological demand will directly affect the quality of its programmes and the degree of employability of its graduates.

Echoing studies that call for the incorporation of MT and PE in tertiary translation curricula in an explicit way (Krüger 2016; Plaza Lara 2019), this article describes and evaluates a module focused on MT and PE within a postgraduate PSIT programme at the University of Alcalá (Madrid, Spain). A mixed-methods methodology was used to collect both quantitative data (via a questionnaire) and qualitative data (via a reflective essay) from a group of 42 students during the 2020–2021 academic year. The evaluation of the module includes the learning outcomes, the implementation of the training proposal, and the students' perceptions of its suitability and usefulness within the postgraduate PSIT programme.

2. PSIT and automated translation processes

While PSIT has been characterised by conceptual diversity throughout its evolution, it is now considered a subfield within translation studies (Cedillo Corrochano 2021; Valero

Garcés 2019). PSIT¹ occurs in various public service institutions (e.g., courts, hospitals, police stations, health centres, schools, administration offices, etc.) and provides assistance to their workers and service users who are not fluent in a state's official language(s) (Taibi and Ozolins 2016).

The existing need for PSIT providers in Spain has generated growing interest in this area among academics. More PSIT training programmes are thus being offered by universities, and PSIT pedagogies have been proposed (Abril 2006; Angelelli 2006; Del Pozo 2009; Valero-Garcés 2013). Like general training in translation, training in PSIT must keep pace with advances in digital translation technology (Liu 2018). For example, the latest advances in MT are shaping (and conditioning) the skills of PSIT professionals (Valero-Garcés 2019). This means that those trained in PSIT in Spain, for example, must be aware of, and know how to incorporate, technology that can assist them in breaking down or minimising the linguistic and cultural barriers that exist for migrant populations. In this sense, it is necessary to incorporate training in technology to meet the continuous demand for an increasingly 'technologized' PSIT translator's profile, since the lack of technological skills can hinder professionals' development and their integration (Vigier Moreno and Pérez Macías 2020).

Although translator training gathers an important number of tertiary translation programmes which include MT (Doherty and Moorkens 2013; Guerberof and Moorkens 2019; Guinovart Cid and Colominas Ventura, 2020; Koponen 2015), there are hardly any translator training proposals in PSIT focused on MT and PE. However, it is necessary to not only incorporate technological content, but also devise an effective way to do so. In line with what Plaza Lara (2019) indicates regarding postgraduate translation programmes, training in MT and PE needs to be attuned to students' specialisation, which leads to a reconsideration of the PSIT teaching model.

There are various typologies of competences necessary for specific MT and PE activities (e.g., Konttinen, Salmi, and Koponen 2020; Rico 2017; Rico Pérez 2021; Sánchez Gijón 2016). Due to the context in which the present study was conducted, it adopts the classification of skills proposed by Rico (2017) and combines it with the model developed by the European Commission in partnership with higher education institutions

¹ Our research focuses on translation in public service. However, we have chosen PSIT (Valero-Garcés 2019) due to the fact that it is widely used to refer to both translation and interpreting in Spain.

offering master's level translation programmes, the European Master's in Translation (EMT; EMT Network 2017). Rico (2017) starts from the initial premise of MT being a *process*, not a *product*; that is, MT is positioned as an instrument with which the user interacts and over which they exercise control. Moving away from reductionist and simplified visions of technology, Rico (2017, 81–82) develops a model of competencies based on three pillars: (1) technology as an indissoluble part 'of the translator-translation equation'; (2) translation as an eminently collaborative activity; and (3) conception of competence as the combination of capacities, knowledge, aptitudes, and attitudes that all students must develop. In the case of the EMT, the programme dates back to 2009 and was originally designed to promote the quality of translator training and help future graduates in their integration into the translation job market (EMT Network, 2017). The EMT includes a list of competencies that students needed to acquire (Chodkiewicz 2012), and the framework explicitly mentions PE as part of the intercultural competence and MT as part of the technological competence (EMT 2009). In 2017, the model was updated with increased emphasis on the technological component, a consequence of the technological advances and developments, and now distinguishes five areas of competence: (1) related to language and culture (knowledge of aspects among different cultures as well as sociolinguistic issues and communication strategies); (2) translation (strategic, methodological, and thematic competence); (3) technology (knowledge of tools and their use); (4) personal and interpersonal skills (abilities that allow the employability of the students); and (5) the provision of services (knowledge of the translation market and relationship with clients, among others) (EMT Network 2017, 4).

3. Integrating machine translation and post-editing in a postgraduate PSIT programme: course description and procedure

Our study takes place within a compulsory course titled *Techniques and Resources for PSIT*, which is part of the one-year postgraduate programme Master in Intercultural Communication, Public Service Interpreting and Translation offered by the University of Alcalá (Madrid, Spain). This course serves as the basis for introducing, developing, and promoting the use of various tools throughout the postgraduate PSIT programme. The course lasts one semester, and it includes the following components, weeks 9 and 10 being the period where the present study was carried out:

- (1) weeks 1–4 (online module): main issues in translation technology (translation memories, terminological tools, MT and PE) (8 hours)
- (2) weeks 5 and 6: corpus management tools (8 hours)
- (3) weeks 7 and 8: computer-assisted translation tools and terminological tools (8 hours)
- (4) weeks 9 and 10: MT and PE: main concepts, MT engines typology, MT evaluation and PE (8 hours).

At the end of the course, the following objectives are expected to have been achieved: (1) identify main translation problems and solve them by implementing the appropriate translation technology tool; and (2) apply translation technology (e.g., translation memories, terminology management tools, corpus management tools, MT) to the main translation problems in PSIT. More specifically, students are encouraged to see the translator as an essential and key figure in the human-machine interaction context.

Regarding the learning outcomes of the module focused on MT and PE (weeks 9 and 10), at the end of the course students are expected to be able to:

- (1) apply MT and PE skills to various translation settings
- (2) interact with different translation technology tools (e.g., computer-assisted translation tools and MT) as part of the translator ecosystem
- (3) identify quality standards required in each specific translation setting
- (4) understand the ethics surrounding MT.

It is important to note that, earlier in the course, students have already been introduced to other types of translation tools, such as assisted translation, corpus management, and terminology extraction, before the MT and PE module.

Where MT and PE content is incorporated into tertiary translation programmes, it is usually offered either as a specific course (Doherty and Kenny 2014; Koponen 2015; O'Brien 2002) or as a part of other pedagogical models (González Pastor and Rico 2021; Shuttleworth 2002), which was the research context of this study. The decision to integrate the module into the course was a response to the current needs of the translation industry, in which MT and PE are used heavily every day. Following González Pastor and Rico (2021), Shuttleworth (2002) and Rico (2017), it was considered appropriate to conceive of MT as one of the many tools in the translator's toolkit.

As it has been mentioned at the beginning of the paper, PSIT training must adapt to the requirements of society's needs, which increasingly demand interpreters and translators to manage to fit the digital era (Valero-Garcés 2019). In this line, MT, and tasks related to it such as PE, need to be part of PSIT programmes in order to train future PSIT interpreters and translators to better suit translation markets demands. Also, they not only need to be trained in MT typology or PE guidelines, but, due to PSIT specificities (e.g., there are cases where sensitive information is involved with migrant population), other issues related MT must be taken into consideration (e.g., ethics and responsible use of MT).

In terms of the content of the MT and PE module, the following areas were covered:

- (1) main issues in MT: past, present and future
- (2) MT typology: rule-based machine translation (RBMT), statistical machine translation (SMT), and neural machine translation (NMT)
- (3) applications of MT in PSIT
- (4) manual and automatic quality metrics in MT
- (5) PE: main concepts, types, and common errors.

Regarding the teaching methodology employed for the module, one of the most established methods within translation teaching was chosen: the task-based approach (González Davies 2004; Hurtado Albir 2007; Rodríguez-Castro 2018). In this approach, every component of the curricular design is interwoven: (1) the objectives; (2) the dynamics with which the task is carried out (e.g., in a group, in pairs); (3) the materials, which form the starting point of the task; (4) the activities; and (5) the roles of the teacher and the student.

The impact of COVID-19 pandemic resulted in a reconsideration of the course curriculum and adaptation to a new teaching environment. Interactive expository and active expository lessons (remote face-to-face work) were employed to raise awareness of the importance of MT and PE and their benefits for translation in general, as well as its applications in PSIT. Tasks promoted group problem solving and critical thinking, as well as encouraging students to explore, question, and build positive attitudes towards MT (González Pastor and Rico 2021). The following guidelines helped adapt to this new

learning process: (a) formulate clear questions adjusted to the state of development of the knowledge imparted, paired with the objectives and content of the subject; (b) ask students at the beginning and end of each session whether they understood the content; (c) research students' beliefs about the matter; (d) encourage students to ask questions and discuss answers; (e) critically analyse the answers given.

Students keenly participated in the active expository activities, which included problem-based exercises, case study, and group work. Problem-based exercises helped make learning open and flexible: they encouraged students' creativity and critical thinking; helped them determine the meaning of the tasks' main concepts; established connections between concepts; and encouraged the drawing of conclusions. Undoubtedly, learning based on problem solving can be considered one of the strategies most in line with the new vision of higher education, since it is a form of open learning that takes place outside of the formal teaching context. (Nuñez and Bolaños Medina 2017). The problem-based tasks promoted self-directed learning, the search for and understanding of new information, and the development of new knowledge at students' own pace. Students were exposed to different examples of under and over-postediting and were encouraged to fix them by following some specific post-editing guidelines. The case studies, meanwhile, sought to promote student decision making. Typically, students were presented with a complex situation, often a real case, and provided with certain information. As an example, students were exposed to an activity where they had to consider how to introduce MT and PE into an NGO (e.g., advantages and disadvantages, technical infrastructure, funding, etc.). This activity was therefore very practical and provided students with real-world-like experience. As a last example of active expository activities, team or group work is an essential strategy at every educational level, and especially at a tertiary level. On the other hand, group work helps students discuss a specific topic, solve practical problems, and apply theoretical knowledge and it also facilitates learning in both the affective and cognitive domains (Huerta Barros 2011). It can take various forms and will vary according to the number of participants and their degree of commitment. For instance, activities devoted to manual and quality metrics were carried out in groups and their results were discussed by the rest of the groups. This task was valuable to promote critical thinking about the idea of quality in MT and the need of the appropriate type of post-editing.

Taking all of the above into account, as well as the specific circumstances of the context in which *Techniques and Resources for PSIT* was taught in the 2020–2021

academic year, the teaching methodology adopted both theory and practice in varied and dynamic sessions, with an important emphasis on student participation, interaction, and individual work, as well as collaborative work in pairs or groups. In short, the teaching methodology sought to establish dynamics of theoretical-practical activities that created more than just a superficial understanding of MT and PE. In addition, and perhaps most importantly, it sought to create in the students a habit of thinking for themselves on the appropriate use of MT and PE within the context of PSIT. In terms of assessment, continuous or formative assessment was performed, based on the performance of class tasks (individual, in pairs, or in groups).

4. Methods

Following Guinovart and Ventura (2021), this study adopted a mixed-methods methodology designed to answer the following research questions:

- (1) What are students' perceptions of the incorporation of MT and PE as tools in a course on PSIT?
- (2) Do students perceive the incorporation of MT and PE into a course on PSIT as useful?

The participants consisted of 42 English-Spanish combination students enrolled in the *Techniques and Resources for PSIT* course during the 2020–2021 academic year. To answer the first research question, a quantitative questionnaire was administered to the 42 student participants (Appendix 1) and distributed through EncuestaFacil platform, which supports a clear and simple design. The questionnaire was validated through a pilot study by trainers in the field of translation technology to avoid any linguistic ambiguities or technical errors (Krosnick and Presser, 2010) related to the online platform. It consisted of eight items that inquired about the profile of the students, their academic background and their perception of MT and PE as tools for PSIT. Following Edley and Litoselitti (2018) recommendations, the questionnaire also included seven statements accompanied by 5-point Likert scales to measure agreement or disagreement. Each statement was assigned a numerical value as follows: (1) Strongly disagree, (2) Mostly disagree, (3) Disagree, (4) Agree, (5) Strongly agree. As suggested in different studies (Décieux et al. 2015; de Wit, Crasborn and Napier 2021), a DK (do not know) was not included as it could lead to “dropout, poor quality or missing data” (Crasborn and Napier 2021: 7). After their informed consent was obtained, students answered the

questionnaire anonymously at the end of the course (November 2020).

As well as completing the predominantly quantitative questionnaire, students were asked to write a qualitative reflective essay once they finished their postgraduate programme (March 2021), which was analysed in order to answer the second research question of the study. Students were asked to write a brief essay (Appendix 2) of no more than one page and send it by email to the teacher in order to reflect on the usefulness of MT and PE in the context of PSIT throughout the postgraduate programme. Students had two weeks to send the reflective essay and were informed it would be used for academic purposes. The Nielsen (2012) usability matrix, which similar studies have used (e.g., Suokas et al. 2015; Koskinen and Ruokonen 2017), was utilised to analyse the essays (Table 1).

Table 1. Usability matrix

USABILITY (NIELSEN 2012)	MATRIX
Learnability	How easy is it for users to accomplish basic tasks the first time they encounter the design?
Efficiency	Once users have learned the design, how quickly can they perform tasks?
Memorability	When users return to the design after a period of not using it, how easily can they re-establish proficiency?
Errors	How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
Satisfaction	How pleasant is it to use the design?

Source: Nielsen 2012.

In terms of analysis, and following Koskinen and Ruokonen (2017), we used an Excel spreadsheet to gather and organize all the essays and data was divided according to the usability matrix (Table 1).

5. Results and Discussion

Regarding the questionnaire, questions 1–4 asked for students’ age, gender, nationality, and undergraduate degree completed, respectively, while their prior knowledge of MT and PE was sought in questions 5 and 6. The participants had a mean age of 22 years, were predominantly female, and most were of Spanish nationality (two participants came

from the United States, and one was British). Table 2 shows that, although the majority were translation and interpreting graduates (84%), 10% came from related fields such as English or Hispanic Studies, and 6% came from fields outside languages, such as Sociology, Architecture, and Journalism.

Table 2. Participants' tertiary education background

	Frequency (%)
BA Translation and Interpreting	35 (84%)
BA English Studies	2 (5%)
BA Spanish Studies	2 (5%)
BA Journalism	1 (2%)
BA Sociology	1 (2%)
BSc Architecture	1 (2%)

The results from questions 5 and 6 corroborated studies such as Cid-Leal, Espín-García, and Presas (2020), which found the presence of MT in translation and interpreting degree programmes to be scarce. Interestingly, only 22% of the participants had received some training in MT and PE (e.g., translation technology) in the form of a compulsory module that was part of their undergraduate degree. Participants indicated that their instruction in MT had been mostly theoretical, such as the typology of MT systems. Some participants even considered their MT instruction in their undergraduate studies to have been pointless, since it had not included specialised applications. Others indicated that their familiarity with MT had come via talks or specialised seminars within their degree course, which are particularly useful for introducing students to professional practices.

Question 7 sought to understand how well, from the students' perspective, the MT and PE content was integrated into the rest of the PSIT postgraduate programme. Responses reflected systematic use of MT by students throughout the postgraduate programme. Question 7a then sought to determine the type of translation for which the students had used MT, as well as its purpose. Here there was no major difference between the use of MT in L1 (55%) and L2 (45%) translation. In both cases, participants highlighted that their main reasons for using it were to understand the text in general, and to make quick terminological searches. Finally, question 8 asked participants to express their agreement or disagreement, using a 5-point Likert scale, with seven statements concerning the content of the module and their perception of the incorporation of MT and PE as tools in a course on PSIT.

As Table 3 shows, in general the MT and PE content taught within the course was well received by the students. They felt the content increased their interest on translation technology in general (item 1) and was appropriate (item 2), and at the same time believed it was necessary to complete the range of tools covered by the postgraduate PSIT programme (item 3). This result is quite relevant as recent voices (Valero-Garcés 2019) are claiming more technological content should be part of PSIT training programmes. Students also approved of the teaching methodology employed (item 4), which highlights the need of combining different approaches (problem-based learning, case studies or group work) in online learning and proved to be an adequate methodology to the new teaching environment caused by the COVID-19 pandemic. Although their general evaluations were positive, most of the participants did not believe that the content was sufficient for them to feel fully confident using MT (item 5), a concern that we also observed in the reflective essays. It has to be pointed out that Techniques and Resources for PSIT was an introductory subject, as it has been stated before, whose main aim was to provide a general view of the technological landscape in PSIT. Nevertheless, this finding has to be taken into account for future teaching courses within the PSIT postgraduate programme. On the other hand, the vast majority of participants agreed that the content would serve them well in their professional careers (item 6). Finally, despite any reluctance they might have felt, the participants were aware of the need to incorporate MT and PE content into the postgraduate PSIT programme (item 7) and consider them as valuable tools for PSIT.

Table 3. Distribution of responses to question 8 of the questionnaire

	(1)	(2)	(3)	(4)	(5)
1. The ME and PE content has increased my interest in translation technology.	0%	0%	12%	69%	19%
2. The MT and PE content has been appropriate.	0%	0%	15%	64%	21%
3. The MT and PE content has help me complete my training in PSIT tools.	0%	11%	60%	24%	5%
4. The teaching methodology has help me better understand the MT and PE content.	0%	0%	5%	71%	24%
5. I believe that during the PSIT postgraduate programme I have acquired the appropriate skills to use MT.	0%	0%	71%	24%	5%
6. I believe that the MT and PE content covered during the	0%	0%	7%	71%	22%

course will improve my professional development.					
7. The MT and PE content should be part of the PSIT postgraduate programme.	0%	0%	0%	57%	43%

The qualitative instrument used in this study, the reflective essay, was intended to give participants the opportunity to express their views on the MT and PE module and indicate whether it had been useful in the rest of their postgraduate programme. Various studies have focused on understanding the perceptions of users, whether professional translators or translation students, towards tools, such as MT, which are increasingly present at the professional level and which almost certainly will be part of their day-to-day work (Moorkens 2018, Vieira and Alonso 2020; Vigier Moreno and Pérez Díaz 2020). Since students had already received instruction on other tools (e.g., translation memories and corpus management), they would also be able to reflect on the place of MT in the PSIT technological toolkit as a whole.

There were 42 reflective essays in total, each of which was analysed according to the five categories of the Nielsen (2012) usability matrix. We should note that not every essay reflected on or responded to every element of the matrix, and that some categories included both positive and negative attitudes. It needs also to be pointed out that some answers offer an evaluation of both the module and MT and PE itself. In general, students' comments related to the Satisfaction, Efficiency, and Errors categories of the matrix, with very few comments relating to Learnability and Memorability.

In general, the majority of the essays indicated satisfaction with the module, whether in whole or part, as it has been also stated in the questionnaire. The students expressed their satisfaction with the course's MT and PE content and felt that it filled an important knowledge gap:

[22]: The content on machine translation and post-editing was excellent! I never thought it was going to be part of this master's [programme].

[40]: I really enjoyed every minute! My knowledge on machine translation was really shallow.

[39]: The module devoted to machine translation and post-editing has been really useful as I didn't know anything about it.

Students' satisfaction with the module was also related to their positive perception (or change in their perception) towards MT and PE tasks.

[27]: Before starting this module, my attitude towards machine translation was rather negative. There so many bad comments about machine translation quality. But after this module I think I know what machine translation is and when I should (or shouldn't) use it. It's just a tool and I need how to use it when translating. It can make my job easier!

[36]: Now I'm aware of the usefulness of machine translation and post-editing as a tool if you know how to use it. I believe my professional profile has improved after practising with it.

In addition to satisfaction, efficiency was another prominent category that emerged from the analysis. In this sense, efficiency came out as a positive feature of the PSIT programme design. Most of the students highlighted the usefulness of MT and PE content within the PSIT programme and its usefulness in specific contexts (e.g., migratory contexts and emergency situations).

[10]: I was familiar with machine translation in a sense as it was part of my academic background. However, I didn't know anything about quality and metrics. It's just amazing how machine translation can help us. Translators must adapt to technology.

[12]: I realise now that machine translation can speed up translation processes in contexts where I thought it was impossible to use it, such as migratory contexts. I think that NGOs should take advantage for machine translation and teach their translators how to post-edit.

[14]: The module has provided me with the knowledge and tools I need to better understand how MT and PE work in PSIT. For instance, how to integrate them as part of my daily translation tasks.

These categories – satisfaction with the module and the efficiency of MT – pervaded the essays, as did comments that the course had changed their attitude towards MT for the better. This suggests one of the main objectives of introducing automated

translation content into the postgraduate PSIT programme has been achieved; that is, that students develop a critical attitude towards MT and PE and understand when it is necessary (and useful) to use it in PSIT contexts.

[16]: I was reluctant to use [MT], but now I consider I must integrate it when requested. Thanks!

[29]: I wasn't sure at the beginning. Maybe it was because we heard about its bad reputation. But I understand now that machine translation quality depends on the texts we use to be translated by a machine search engine, for instance.

[33]: Machine translation and post-editing was not a popular topic in my degree in translation and interpreting. And I had a bad opinion about it. But I have to say I completely have changed my mind after studying this module!

Another component in Nielsen's matrix focuses on errors of the program design. As Koskinen and Roukonen (2017), this category needed to be modified into product error and system errors due to the fact that participants' answers were focused both on the content and MT and PE itself. In this line, the errors associated with the use of MT were frequently mentioned in the reflective essays (product errors), but also there were comments closely connected to the programme design (system errors).

[5]: I have found many errors when using a machine translation engine in legal translation. But it has been a useful tool to grasp the general idea in some texts or the meaning of some terms.

[6]: I was not familiar MT and PE. Although we have worked on them, I think we needed more time to better grasp the idea of PE.

[7]: I would prefer to devote more time to this content [MT and PE in PSIT]. I know that we don't have more time for this module, but maybe some extra sessions could help reinforce content on MT and PE.

In terms of learnability and memorability, as also reported by Koskinen and Roukonen (2017), there are few examples in the reflective essays. It could be argued that

participants are used to employing different translation technology tools. However, there are some comments on the part of those who were not familiar with MT and PE, mainly those whose academic background was not related to translation and interpreting.

[4]: I was not familiar with machine translation or post-editing as my academic background is different from translation and interpreting. Sometimes it was really difficult to follow explanations. I felt a bit lost! I didn't know where to start!

[8] Definitely I need more time to learn about MT and PE. I know it's not difficult, but I need to develop my PE skills. Maybe the course should include more hours for this course or provide some extra hours for a workshop on PE.

6. Conclusions and implications

Interpreters and translators are increasingly using, and relying on, digital technology in their work, and it is a constant challenge for tertiary educators to ensure their curricula keep pace with advances in technology. They have succeeded in the cases of translation memories, corpus management, and terminology extraction tools, but MT and PE are yet to be fully incorporated into undergraduate and graduate training programmes (Cid Leal, Espín-García, and Presas 2019; Plaza Lara 2019). For this reason, the main objective of the study reported here was to understand the perceptions of a group of postgraduate students towards the incorporation and usefulness of a MT and PE module as a tool in the specialised context of a postgraduate PSIT programme. The use of the latest translation technology poses a challenge in PSIT, given the profoundly social nature of facilitating intercultural mediation. The main objective of the MT and PE module was therefore to encourage students to see MT as another tool in the PSIT toolkit, alongside translation memories or terminology management memories – as a tool they can incorporate into their daily work with the knowledge of how and when to use them.

The quantitative and qualitative results of this mixed-methods evaluation study show that the students were satisfied with both the content of the MT and PE module and its implementation. However, some students felt that the module needed to be developed further in order to better integrate it with the postgraduate PSIT programme as a whole. Participants offered some suggestions for its improvement and to better accommodate their MT and PE skills. For instance, participants claimed more teaching hours should be devoted to the course in order to fully develop and consolidate their PE skills. They also agree that content on MT and PE is a must in PSIT training. Students have also been able

to observe the diversity in the field of MT application in PSIT. In the current migratory context of Spain, the inclusion of modules on MT and PE in postgraduate translation programmes is vital to fully prepare students for their careers in PSIT. Although we are aware of the limitations of our study due to the number of participants, we consider this work contributes to filling in the existing gap between PSIT and technology, and that it can provide the guidelines necessary for incorporating MT and PE into other PSIT postgraduate programmes.

References

- Abril, M. I. 2006. “La interpretación en los servicios públicos: caracterización como género, contextualización y modelos de formación. Hacia unas bases para el diseño curricular.” PhD diss., University of Granada.
- Aldea Sánchez, P., P. Arróniz de Opacua, J. Ortega Herráez, and S. Plaza Vázquez. 2002. “Situación actual de la práctica de la traducción y de la interpretación en la administración de justicia.” In *La traducción en el ámbito institucional: autonómico, estatal y europeo*, edited by S. Cruces and A. Luna, 85–126. Vigo, Spain: University of Vigo.
- Angelelli, C. 2006. “Designing Curriculum for Healthcare Interpreter Education: A Principles Approach.” In *New Approaches to Interpreter Education*, edited by C. Roy, 23–46. Washington, DC: Gallaudet University Press.
- Borja Albi, A. 2000. *El texto jurídico inglés y su traducción al español*. Barcelona: Ariel.
- Cedillo Corrochano, C. 2021. “La pluralidad denominativa de la traducción e interpretación en los servicios públicos a través de Twitter y YouTube.” *Lebende Sprachen* 66 (1): 180–192. doi:[10.1515/les-2021-0009](https://doi.org/10.1515/les-2021-0009).
- Chodkiewicz, M. 2012. “The EMT Framework of Reference for Competences Applied to Translation: Perceptions by Professional and Student Translators.” *JosTrans* 17: 37–54.
- Cid Leal, P., M. C. Espín-García, and M. Presas. 2019. “Traducción automática y posesión: Perfiles y competencias en los programas de formación de traductores.” *MonTI* 11: 187–214. doi:[10.6035/MonTI.2019.11.7](https://doi.org/10.6035/MonTI.2019.11.7).
- De wit, M., O. Crasborn, and J. Napier. 2021. “Interpreting international sign: Mapping the Interpreter’s profile.” *The Interpreter and Translator Trainer* 15 (2): 205–224.

- Décieux, J., A. Mergener, K. Neufang, and P. Sischka. 2015. "Implementation of the Forced Answering Option within Online Surveys: Do Higher Item Response Rates Come at the Expense of Participation and Answer Quality?" *Psihologija* 48 (4): 311–326. doi:10.2298/PSI1504311D.
- Del Pozo, M. 2009. "Una propuesta formativa en interpretación en los servicios públicos en el marco del EEES." *Redit* 3: 31–51.
- Doherty, S., and J. Moorkens. 2013. "Investigating the Experience of Translation Technology Labs: Pedagogical Implications." *JosTrans* 19: 122–136.
- Doherty, S., and D. Kenny. 2014. "The Design and Evaluation of a Statistical Machine Translation Syllabus for Translation Students." *The Interpreter and Translator Trainer* 8 (2): 295–315. doi:[10.1080/1750399X.2014.937571](https://doi.org/10.1080/1750399X.2014.937571).
- Edley, N, and L. Litoselitti. 2018. "Critical perspectives on using interviews and focus groups." In *Research methods in linguistics*, edited by L. Litoselitti, 195–225. London: Bloomsbury.
- European Language Industry. 2020. *European Language Industry Survey 2020 before and after COVID-19*. Accessed May 26, 2021. https://ec.europa.eu/info/sites/default/files/2020_language_industry_survey_report.pdf
- European Master's in Translation Network. 2009. *Competences for professional translators, experts in multilingual and multimedia communication*. Accessed May 26, 2021. https://ec.europa.eu/info/sites/default/files/emt_competences_translators_en.pdf
- European Master's in Translation Network. 2017. *European Master's in Translation Competence Framework 2017*. Accessed May 26, 2021. https://ec.europa.eu/info/sites/info/files/emt_competence_fw_k_2017_en_web.pdf
- Gonzalez-Davies, M. 2004. *Multiple Voices in the Translation Classroom: Activities, Tasks and Projects*. Amsterdam: John Benjamins. doi:[10.1075/btl.54](https://doi.org/10.1075/btl.54).
- González Pastor, D., and Rico, C. 2021. "POSEDITrad: La Traducción Automática y la Posedición Para la Formación de Traductores e Intérpretes". *Revista Digital de Investigación en Docencia Universitaria*, 15(1), e1213. doi: 10.19083/ridu.2021.1213
- Guerberof, A., and J. Moorkens. 2019. "Machine Translation and Post-Editing Training as Part of a Master's Programme." *JosTrans* 31: 217–238.

- Guinovart Cid, C., and C. Colominas Ventura. 2021. "The MT Post-Editing Skill Set: Course Description and Educators' Thoughts." In *Translation Revision and Post-Editing. Industry Practices and Cognitive Processes*, edited by M. Koponen, B. Mossop, I. S. Robert, and G. Scocchera, 226–246. London: Routledge. doi:[10.4324/9781003096962-17](https://doi.org/10.4324/9781003096962-17).
- Huerta Barros, E. 2011. "Colaborative Learning in the Translation Classroom: Preliminary Survey Results." *JoSTrans: The Journal of Specialised Translation* 16: 42–60. Accessed May 26, 2021. https://jostrans.org/issue16/art_barros.php
- Hurtado Albir, A. 2007. "Competence-Based Curriculum Design for Training Translators." *The Interpreter and Translator Trainer* 1 (2): 163–195. doi:[10.1080/1750399X.2007.10798757](https://doi.org/10.1080/1750399X.2007.10798757).
- Konttinen, C., L. Salmi, and M. Koponen. 2021. "Revision and Post-Editing Competences in Translator Educator." In *Translation Revision and Post-Editing. Industry Practices and Cognitive Processes*, edited by M. Koponen, B. Mossop, I. S. Robert, and G. Scocchera, 187–202. London: Routledge. doi:[10.4324/9781003096962-15](https://doi.org/10.4324/9781003096962-15).
- Koponen, M. 2015. "How to Teach Machine Translation Post-Editing? Experiences from a Post-Editing Course." In *Proceedings of 4th Workshop on Post-Editing Technology and Practice (WPTP4)*, edited by S. O'Brien and M. Simard, 2–15. Washington, DC: Association for Machine Translation in the Americas. Accessed May 26, 2021. https://amtaweb.org/wp-content/uploads/2015/10/MTSummitXV_WPTP4Proceedings.pdf
- Koskinen, K., and M. Ruokonen. 2017. "Love Letters or Hate Mail? Translators Technology Acceptance in the Light of Their Emotional Narratives." In *Human Issues in Translation Technology*, edited by D. Kenny, 8–24. London: Routledge.
- Krosnick, John. A., and S. Presser. 2010. "Question and Questionnaire Design." In *Handbook of Survey Research*, edited by J. D. Wright and P. V. Marsden, 263–313. Bingley: Emerald.
- Krüger, R. 2016. "Situated LSP Translation from a Cognitive Translational Perspective." *Lebende Sprachen* 61 (2): 297–332. doi:[10.1515/les-2016-0014](https://doi.org/10.1515/les-2016-0014).
- Liu, H. 2018. "Help or Hinder? The Impact of Technology on the Role of Interpreters." *FITISPos International Journal* 5 (1): 13–32. doi:[10.37536/FITISPos-IJ.2018.5.1.162](https://doi.org/10.37536/FITISPos-IJ.2018.5.1.162).

- Memsource 2021. *Machine Translation Report Q1/2021*. Accessed May 26, 2021. <https://www.memsource.com/blog/memsource-translate-profiles/>
- Moorkens, J. 2018. "What to Expect from Neural Machine Translation: A Practical in-class Translation Evaluation Exercise." *The Interpreter and Translator Trainer* 12(4): 375-387. doi: 10.1080/1750399X.2018.1501639.
- Nunan, D. 1989. *Designing Tasks for the Communicative Classroom*. Cambridge: Cambridge University Press.
- Nielsen, J. 2012. "Usability 101: Introduction to Usability." Nielsen Norman Group. Accessed May 26, 2021. <https://www.nngroup.com/articles/usability-101-introduction-to-usability/>
- Núñez, J. and A. Bolaños Medina (2017). "Predictors of problem-solving in translation: implications for translator training." *The Interpreter and the Translator Trainer* 12 (3): 1-17. Doi: 10.1080/1750399X.2017.1359762
- O'Brien, S. 2002. "Teaching Post-Editing: A Proposal for Course Content". In *Proceedings of the 6th EAMT Workshop on Teaching Machine Translation*, 99–106. Allschwil, Switzerland: European Association for Machine Translation.
- Plaza Lara, C. 2019. "SWOT Analysis of the Inclusion of Machine Translation and Post-Editing in the Master's Degrees Offered in the EMT Network." *JosTrans* 31: 260–280.
- Rico, C. 2017. "La formación de traductores en traducción automática." *Tradumática* 15: 75–94.
- Rico Pérez, C. 2021. *Fundamentos teórico-prácticos para el ejercicio de la traducción*. Granada, Comares.
- Rodríguez-Castro, M. 2018. "An Integrated Curricular Design for Computer-Assisted Translation Tools: Developing Technical Expertise." *The Interpreter and Translator Trainer* 12 (4): 355–374. doi:[10.1080/1750399X.2018.1502007](https://doi.org/10.1080/1750399X.2018.1502007).
- Sánchez Ramos, M. M. 2020. *Documentación digital y léxico en la traducción e interpretación en los servicios públicos (TISP): fundamentos teóricos y prácticos*. Berlin: Peter Lang. doi:[10.3726/b16632](https://doi.org/10.3726/b16632).
- Sánchez Ramos, M. M., and C. Rico Pérez. 2020. *Traducción automática. Conceptos clave, procesos de evaluación y técnicas de posesición*. Granada: Comares.

- Sánchez Ramos, M. M., and C. Rico Pérez. 2020. *CRISIS-MT: traducción y tecnología en la comunicación multilingüe para las ONG en situaciones de emergencia*. University of Alcalá. Accessed May 26, 2021. <https://ebuah.uah.es/dspace/handle/10017/42946>
- Sánchez-Gijón, P. 2016. “La posesición: hacia una competencial del perfil y una descripción multidimensional del fenómeno.” *Sendebarr* 27: 151–162.
- Suokas, J., K. Pukarinen, S. von Wolff, and K. Koskinen. 2015. “Testing Testing: Putting Translation Usability to Test.” *Trans-kom* 8 (2): 499-519.
- Shuttleworth, M. 2002. “Combining MT and TM on a Technology-Oriented Translation Masters: Aims and Perspectives.” In *Proceedings of the 6th EAMT Workshop on Teaching Machine Translation*, 123–129. Allschwil, Switzerland: European Association for Machine Translation.
- Taibi, M., and U. Ozolins. 2016. *Community Translation*. London: Bloomsbury.
- Valero-Garcés, C. 2013. “Formación de traductores e intérpretes en una sociedad multicultural. El programa de la Universidad de Alcalá.” *Cuadernos de ALDEEU* 25: 215–238.
- Valero-Garcés, C. 2019. “Intercultural Communication, Public Service Interpreting and Translation.” In *The Routledge Handbook of Spanish Translation Studies*, edited by R. Valdeón García and A. Vidal Claramonte, 211–226. London: Routledge. doi:[10.4324/9781315520131-13](https://doi.org/10.4324/9781315520131-13).
- Vieira, L. N. and Alonso, E. 2020. “Translating Perceptions and Managing Expectations: An Analysis of Management and Production Perspectives on Machine Translation.” *Perspectives* 28 (2): 163–184. doi: 10.1080/0907676X.2019.1646776.
- Vigier Moreno, F. J. and L. Pérez Macías. 2020. “¿Es eficaz la posesición para la traducción inversa de textos jurídicos? Una experiencia con estudiantes de posgrado.” In *Claves para la innovación pedagógica antes los nuevos retos: respuestas en la vanguardia de la práctica educativa*, edited by E. López Meneses, D. Cobos Sánchez, L. Molina García, A. Jaén Martínez and A. Hilario Martín Padilla, 2499–2508. Barcelona: Octaedro.

Table 1. Participants' tertiary education background.

Table 2. Distribution of responses to question 8 of the questionnaire.

Table 3. Usability matrix.

Appendix 1 (Questionnaire)

Please complete the following information:

1. Age
2. Sex
3. Nationality
4. Academic background
5. Indicate your previous knowledge of machine translation (MT) and post-editing (PE).
For instance, state if the MT and PE content has been part of your undergraduate studies.
If your answer is Yes, please answer question 6. If your answer is no, please answer question 7.
6. Explain if this content was taught as part of a subject (e.g., compulsory or optional), specialised seminar, additional course, etc.
7. After completing Techniques and Resources in PSIT, have you used MT and PE in any of the subjects? If your answer is Yes, please answer question 7a. If your answer is No, please answer question 8.
- 7a. Specify the type of translation (e.g., direct or reverse translation) and main purpose of using MT.
8. Please rank the following statements if you (1) Strongly disagree, (2) Mostly disagree, (3) Disagree, (4) Agree, (5) Strongly agree.

	(1)	(2)	(3)	(4)	(5)
1. The ME and PE content has increased my interest in translation technology.					
2. The MT and PE content has been appropriate.					
3. The MT and PE content has help me complete my training in PSIT tools.					
4. The teaching methodology has help me better understand the MT and PE content.					
5. I believe that during the PSIT postgraduate programme I have acquired the appropriate skills to use MT.					
6. I believe that the MT and PE content covered during the course will improve my professional development.					
7. The MT and PE content should be part of the PSIT postgraduate programme.					

Appendix 2 (Reflective essay)

Write a brief essay (no more than one page) to reflect upon the use of MT and PE throughout the postgraduate programme. Highlight those issues you consider relevant (usefulness or not of MT and PE, advantages or disadvantages of using MT and PE during the programme, how you have used MT during your translation process, etc.).

Please return your essay by email in the next two weeks.