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An introduction
to a machine translation
post-editing (MTPE) course

Abstract. This article introduces a machine translation post-editing (MTPE) course intended for universities educating translation trainees. The aim of the course is to accelerate the adaptation of translation education to the current requirements of the European Master's in Translation (EMT) Competence Framework 2017 and the needs of translation students. The course is firmly grounded in existing research on MTPE and studies of translation didactics. The author assumes that MTPE as a process should include most of the contemporary translation tools such as CAT computer-assisted tools, TM terminology management, ML machine learning, MT machine translation and its variations, AI artificial intelligence, TQM translation quality management. The course is divided into 15 meetings of 1.5 hours each, with the syllabus structured in such a way that the trainees systematically learn and improve the MTPE process and develop an understanding of MT tools. Therefore, it can be treated as a means to achieve the goal set by EMT.

Keywords: MTPE course, translation didactics, EMT competence framework, machine translation post-editing, translation technology.

1. Introduction

This article introduces a proposal for a course in the field of translation technology, namely post-editing of machine translation (MTPE). The MTPE course is intended to be implemented in the second year of a Master's degree in translation studies or as part of a postgraduate programme. It was designed to meet the formal requirements of translation programmes offered in Polish institutions, but, possibly with some modifications, it can also be delivered to translation trainees in other countries. Its implementation is likely to accelerate the alignment of the education of future translators with the European Master's in Translation (EMT) Competence Framework 2017, market demands and student needs. One of the five skills identified by the EMT is technological literacy. The author assumes that MTPE as a process should encompass most of the currently used technological translation tools, such as CAT computer-assisted tools, TM terminology management, ML machine learning, MT machine translation and its variations, AI artificial intelligence, TQM translation quality management. The MTPE course proposal offered in the present paper builds on earlier research and developments in the field of machine

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translation. In view of the above, it may contribute to adapting translation studies in Poland to the pace of technological development and related changes in the image of the contemporary translator. This work may also serve as an inspiration for further research on MTPE issues in the global scope.

The present paper is organized into five sections. Section 2 provides a rationale for including an MTPE course in the translation curriculum in higher education. It draws attention to the problem of insufficient consideration of the ongoing changes in the translation discipline and the way modern translators work. Section 3 presents a review of the literature on the subject. It discusses the most important findings of researchers investigating MTPE and presents the development of the field in the last two decades. Section 4 provides a description of the MTPE course proposed in this paper. It presents its objectives, methods, intended learning outcomes, the participant profile, and contains a detailed description of the course structure. Section 5 offers some conclusions, and indicates the challenges that the implementation of the course may involve.

2. Rationale

The pace of development in many areas of life is often very intense and therefore demanding. The transformation also affects scholarly disciplines such as translation studies, where technological solutions are increasingly influencing the work of translators. Despite some resistance on their part, innovations often prove to be helpful. Many micro-and macro-level studies described in *Post-editing of Machine Translation: Processes and Applications* by O'Brien et al. (2014) indicate that the appropriate application of innovative solutions, such as machine translation, facilitates, accelerates and improves the translation process. For this to happen, however, a key factor is required: proper training, including that of machine translation post-editing (MTPE), which this paper focuses on. Although machine translation (MT) is not a new phenomenon, interest in this area has increased significantly only over the last decade (Folaron 2019: 430 f.). However, the amount of attention given to it in the process of educating future translators is still limited.

The problem of inadequate attention to ongoing changes in the translation discipline was raised in European Master's in Translation (EMT) Competence Framework published in 2017. The European Master's in Translation network underscores the need to fill the educational gap in the field of technology in translation studies. Of the five competencies described, 'technology' ranks third. Others are 'language and culture', 'translation', 'personal and interpersonal' and 'service provision'. Interestingly, apart from 'technology' competence which encompasses IT, MT and CAT tools, the skills of MT pre-editing and MT post-editing are also outlined in the description of 'translation' competence. The authors argue that these are "essential for access to the translation industry and to the wider labour market" (2017:4). The need for consistency and precise guidelines in the education of future translators is further confirmed by Nikishina (2018) and Tomaszkiewicz (2019). In a similar vein, Esfandiari et al. (2019) argue that translator training programmes should be prepared to ensure that there is no discrepancy between the competencies of graduates and the actual demand on the market. Such observations provide a justification for developing new courses related to machine translation, such as the MTPE course proposed in this paper.

Preliminary research shows that out of thirteen institutions providing BA and MA English language and translation studies in Poland, eight include computer-assisted tools

(CAT) in their curricula, of which only four introduce machine translation (MT) and two MTPE. While CAT is present in five postgraduate programmes, MT and MTPE have been entirely omitted. Interestingly, in almost every case, MT is a part of the computer-assisted tools laboratory that, in general, encompasses 30h. However, it should be mentioned that the Jagiellonian University in Krakow offers CAT Tools & Post-Editing, and the University of Warsaw provides Machine translation and post-editing (Cholewska 2021:19f.). Given that, according to Perspektywy University Ranking 2021 (online 2021), these are the two best universities in Poland, the result is auspicious. It points out that the trend for teaching post-editing is already present but still leaves considerable scope for improvement. Most universities offering translation studies in Poland have not yet sufficiently considered the impact of technology on the work of the translator in their education offer. One of the reasons for this situation might be the lack of an appropriate course in machine translation post-editing. The proposal offered in this paper is intended as a step towards enhancing the process of introducing MTPE in higher education, both in Poland and in other countries.

3. Literature review

A promoter in the development of MTPE research is undoubtedly Sharon O'Brien, Professor of Translation Studies at the School of Applied Language and Intercultural Studies at Dublin City University, who in 2002 published "Teaching Post-editing: A Proposal for Course Content". Next, Belam (2003) introduced a workshop on PE guidelines in a machine-assisted translation course. Further, Kliffer (2008) presented PE teaching as part of the MT programme for translation trainees. Later, Depraetere (2010) investigated a corpus of texts post-edited by ten translation students and concluded a distinct demand to expand the students' understanding of specific MT errors. Pym's (2013) research is particularly noteworthy, as he presented a list of ten skills organised into three categories: "learning to learn, learning to trust and mistrust data, and learning to revise with enhanced attention to detail" as guidelines for technology-adapted translation education. Flanagan and Christensen (2014) highlighted competency gaps that may cause difficulties in interpreting PE guidelines and consequently proposed training activities to address these gaps. Another step towards adapting translation technologies into translation studies was Doherty and Kenny's (2014) study on developing and evaluating an SMT curriculum for postgraduate students in translation studies at Dublin City University. However, one of the more recent studies and in line with the topic of this article is that of Guerberof Arenas & Moorkens (2019), who presented a description of a machine translation and post-editing course including an MT project management module.

Among Polish scholars, it is worth referring to Świątek (2015), who discussed the potential and limitations of statistical machine translation. She concluded that the computer is not an adversary but a tool in the hands of the translator and that translation automation will develop positively. Similar conclusions may be drawn from Witczak's (2016) study, which stated that translation automation could not exist without an essential participant in the process – the translator. Witczak also conducted a study on translation students' perspectives towards the introduction of a post-editing component to a computer-assisted translation course. The results show that while MT in the case of technical texts brought "positive surprise", in the case of journalistic texts, it was described as "some disappointment". However, Witczak stressed the need to give

translation education a direction in line with technological developments. Similarly, research by two other scholars, Nikishina (2018) and Tomaszkiewicz (2019), highlighted the lack of consistency and precise guidelines in the training of future translators. Tomaszkiewicz (2019) further emphasised the need for EMT-compliant education. Brożyna-Reczko (2020) also investigated digital tools in translation didactics, stating that technological tools for proofreading, glossaries and corpora, which translation students can use to improve the translation process, facilitate the translator's work and therefore deserve a place in education. Overall, it is clear that the translation community is unanimous in calling for research into standardising translation curricula in line with available technologies, which is also the aim of this study.

4. The MTPE course proposal

4.1. Objectives

The purpose of the course is to accelerate the alignment of translation education with both the current requirements of the European Master's in Translation Competence Framework 2017 and the needs articulated by translation trainees themselves[2]. Since, as mentioned above, MTPE as a process includes most of the modern translation tools, this course, in addition to introducing theoretical knowledge, provides guidance on using these instruments. It further aspires to equip translation students with skills that meet the needs of the market and the currently changing image of the translator. Finally, the programme also aims to encourage students to reflect on the future of post-editing machine translation and the role of the translator in this process.

4.2. Teaching approach and directions

As noted by Esfandiari (2019), there is still disagreement over teaching models in the field of translation didactics. The beginning of the 21st century marked a shift away from the product- or teacher-centred teaching model (Esfandiari 2019:4). Hence, the course proposed in this study employs a student-centred and process-oriented approach to achieve the intended learning objectives. According to Gonzales-Davies (2004: 16), the student-centred approach assumes an active role of the student in the process of acquiring knowledge and skills, while the teacher acts as a guide in this trajectory. Additionally, the process-oriented approach to teaching translation includes a problem-solving methodology that requires cooperation between teachers and learners as well as learning procedures that are suitable to the actual social situation in the classroom where learning takes place (Fox 2000: 115). As Gonzales-Davies (2004: 14) underscored, these classroom dynamics corresponds to a 'transformational' approach, where "a student and learning-centred context that focuses on collaborative study and exploration of the translation process with the teacher acting as guide and where procedures that bridge class work and extramural practice have a place". To embrace the abovementioned directive, both inductive and deductive directions are used. Prince and Fedler (2006: 126) support this view, suggesting that "learning invariably involves movement in both

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[2] The results of the study "Machine Translation Post-Editing (MTPE) from the Perspective of Translation Trainees: Implications for Translation Pedagogy" that indicates translation trainees' positive attitude towards MTPE as a part of the educational programme were presented at MT Summit 2021 (the paper may be accessed at: https://aclanthology.org/2021.mtsummit-up.15/).

directions, with the student using new observations to infer rules and theories (induction) and then testing the theories by using them to deduce consequences and applications that can be verified experimentally (deduction)."

4.3. Methods

The course is based on an analysis of existing research devoted to MTPE and studies on translation didactics. The methods selected for the course correspond to three areas of student learning outcomes: acquiring theoretical knowledge, developing skills and reflecting autonomously on the studying subject. Table 1 presents the above methods in a detailed way.

Table 1. Methods of the MTPE course

ACQUIRING THEORETICAL KNOWLEDGE	brainstorm, discussion, individual work, teamwork, video watching, reading, writing definitions, phrase-picture association, matching
DEVELOPING SKILLS	brainstorm, individual work, teamwork, interactive game, translation, word-chain, worksheet, quiz, glossary implementing, project, back-translation, working with guidelines, post-editing of website MT content,
REFLECTING ON THE SUBJECT OF STUDY	discussion, essay

Methods used to obtain students' feedback on the course itself are discussions and essays written after it is completed.

4.4. Learning outcomes

The course is designed to achieve a specific set of student learning outcomes. After completing it, students should possess rudimentary knowledge on the following topics:

- various MT tools;
- three types of machine translation methods;
- the dynamics of change and trends in the MT sphere;
- the errors that may occur in MT;
- the principles implied in pre-editing: Controlled Language (CL) rules for MT;
- CAT tools (software, online versions);
- the working environment of CAT tools;
- CAT functions;
- translation memories (TM);
- terminology management via CAT tool;
- the possibilities of implementing glossaries into CAT tools;
- the concept of quality assurance (QA);
- the possibilities of the QA tool in view of CAT;

- the post-editing of MT;
- guidance and evaluation tools of MTPE.

Further, students should demonstrate the abilities to:

- assess the quality of the various MT tool outputs and estimate the amount of post-editor work;
- distinguish between different MT methods;
- assess which tool is most valuable and future-proof for translator's profession;
- identify errors in MT outputs and distinguish between different types of errors;
- apply CL rules to texts from different disciplines;
- adapt appropriate vocabulary;
- prepare a glossary in order to facilitate the MT process;
- translate in a high-speed manner;
- evaluate MT outputs and correct them;
- perform MTPE in the website environment.

Additionally, the course will enable students to strengthen their abilities to work in a team, test their knowledge acquired during the course; evaluate the possibilities of Computer-Assisted Literary Translation (CALT), and whether MT empowers LT; make a comparative analysis of the workload of a traditional form of translation with technology-assisted translation; analyse the quality of the output of HT and MT. CAT tools, as mentioned above, are already present in eight of the thirteen higher education institutions offering translation programmes in Poland. Nevertheless, since the aim of this paper is to contribute to the standardising MTPE training, this part was also included. This study adopts the definition of MTPE which considers this translation method as a process consisting of pre-editing, machine translation and post-editing, and therefore covers the tools that facilitate the translator's work in this field. Finally, each section can be adapted to individual needs for both research and teaching.

4.5. Participant profile

The course is designed to teach translation students who are preferably in their second year of MA studies or a postgraduate programme. Therefore, it is essential that participants have acquired a thorough knowledge of translation theory and a high level of linguistic skills prior to undertaking the course. MTPE programme participants develop their skills in text/translation editing to adapt to the culture-specific features of the target language, to correct linguistic and logical errors, choose the translation method most suitable for the project, etc. For this reason, they should demonstrate considerable knowledge of each of these aspects. The level of expertise in the above factors may impact the outcomes of the course. It is thus advisable to conduct the course in the final year of translation studies to achieve better results.

4.6. Course modality

The format and structure of the course allow for both traditional classroom settings as well as an online class. A dual-mode may be fundamental in light of the current

coronavirus pandemic and how it has impacted education. If the course is held in the classroom, certain conditions must be met. Namely, classes should be conducted in a classroom equipped with computer stations for each participant, with access to the Internet and beamer.

4.7. The structure of the course

The course covers 15 meetings of 1.5 hours each, which is the standard length of courses offered by Polish universities. One lesson scenario corresponds to one session. The tasks are arranged in such a way that the trainees systematically learn and improve the MTPE process. Upon completing the course, the participants should be equipped with basic knowledge of the discussed field and skills that will enable them to work independently in processing machine translations within various fields.

The MTPE programme is structured to include an introduction, the three stages of the MTPE process, time for exercises to consolidate and test the knowledge and skills acquired, as well as a discussion on the future of post-editing and students' evaluation of the course. The first part, lessons 1 and 2, introduces MTPE and different MT methods. The second stage, consisting of lessons 3, 4 and 5, focuses on the first phase of the MTPE process, pre-editing. Students are introduced to different types of errors that occur in MT outputs and rules of Controlled Language for MT. They also learn the basics of developing glossaries. In the next part of the course, students are guided through a computer-assisted tool, CAT, with a machine translation function. Due to the complexity and variety of possibilities offered by CAT software, this part of the course consists of 5 meetings (lessons number 6, 7, 8, 9 and 10), during which students acquire knowledge and skills concerning translation memory, terminology management, introducing glossaries into CAT software and quality assurance. Lesson 11 covers the post-editing component, where students are introduced to post-editing guidelines and assessment tools. In the next part, students test and train their newly acquired skills by creating a project (lesson 12) in a CAT programme, taking part in a human translation versus machine translation of a literary text competition (lesson 13), and translating a website in WordPress interface (lesson 14). The last class (lesson 15) is devoted to discussing the future of post-editing and the implications for its development. It also includes participants' essays evaluating the course, which allows assessment of the effectiveness of the course from the participants' perspective and helps to improve it. The subjects of the lessons are as follows:

1. Introduction to MTPE process: MT tools

2. Three types of MT tools. Rules-based machine translation, Statistical machine translation, Neural machine translation.

3. MT - Finding and naming errors.

4. Controlled Language (CL) rules for MT: create your own list of pre-editing rules.

5. Pre-editing: creating a glossary

6. Introduction to CAT: possibilities, different tools

7. CAT part one: Creating CAT project

8. CAT part two: Creating and implementing glossary

9. CAT part three: working on a project with implemented glossaries

10. CAT part four: downloading texts and checking

11. CAT part five: Translation memories

12. Creating a new project with glossary and TM

13. Competition: Human VS MT

14. Website MT translation

15. MT spoken translation – implications for future development.

4.8. Procedure

Accordingly to the approach stated above, the procedure of lessons consists of the following components:

- Pre-activities – acting as an introduction to the topic of the lesson or a warm-up activity;
- Whilst-activities – consisting of exercises and activities devoted to the topic of a lesson;
- Post-activities – acting as a summary and consolidation of the acquired skills and knowledge from the lesson.

Table 2 provides a comprehensive overview of the components, including activity descriptions and materials.

Table 2. Procedure of lessons: a detailed overview

LESSONS	MATERIALS	PRE-ACTIVITIES	WHILST-ACTIVITIES	POST-ACTIVITIES
Lesson 1	**File**: *Lesson 1 text*, a blackboard/ whiteboard/ beamer.	**Brainstorm** (5 min): The participants are asked to provide their associations with MT. The teacher writes them all on the blackboard. Then the students elicit all MT tools from the list. **Discussion** (15 min). The participants are asked to answer the following questions, and the teacher completes missing information: - What is machine translation? - Have you ever used a machine translation tool? - Which tool do you use most often and why? - Have you ever post-edited MT output before? - In your opinion, does post-editing of MT output require different skills than traditional translation? Do you	**Task 1** (20 min): The participants are given Lesson 1 text and are asked to use four MT tools (e.g. Google Translate, DeepL, Systran, Yandex). Then, they assess translations in groups and choose the best one/s in their opinion. The participants are asked to justify their choice/s. **Task 2** (20 min): In groups, the trainees make a list of features that the translations they have chosen fulfil and a list of mistakes and corrections that should be made in order to improve the quality of translation.	**Quick individual-work project** (20 min project and 10 min evaluation): The participants work individually for 20 min. They are asked to correct the discussed text by implementing the list of corrections they outlined in the previous task to the MT output of their choice. After completing the task, the participants read their post-edited translations and listen to the comments of the rest of a group. Students are also asked if their views on MTPE have changed after the completion of the tasks.

		consider post-editing a meaningful way of producing translation?		
Lesson 2	**Files**: *Lesson 2 pictures, Lesson 2 three texts, Lesson 2 definitions*.	**Phrase-picture association** (10 min). The teacher presents trainees with three pictures. The first depicts a dictionary of grammar and language rules, the second presents statistical diagrams and the third – neurones. The teacher asks the participants to guess the connection between these pictures and MT. All guesses are written on the blackboard, and then the teacher tells the participants the subject of the class.	**Task 1** (30 min): Definitions. The participants work in three groups. Each group receive one definition of the MT method and then formulate two incorrect definitions to make it difficult for the other group/s to guess the correct one. Then each group read all three definitions. The other groups have to choose the correct one. After all groups have read their definitions, they exchange the correct ones once again. **Task 2** (20 min): Discussion. The participants work in the same groups and choose one of the three MT methods and justify their choice. The teacher puts the names of the three methods on the board and notes student's arguments pro and against them.	**Task 3:** (30 min). Three texts evaluation. The participants receive a worksheet presenting one text translated by three different sources. Based on the worksheet, they guess which MT methods could have been implemented in which text and assess which text they think reads best and why. Then they share their views with the group.
Lesson 3	*Spell Checker Poem* (1992) by Jerrold H. Zar, files: *Lesson 3 errors for students, Lesson 3 errors for teachers, Lesson 3 three*	**Poem** (10 min). As a warm-up activity, the teacher provides trainees with the Spell Checker Poem (1992) by Jerrold H. Zar. The trainees are to find spelling errors in the poem. Then a volunteer presents errors and reads the poem aloud. The teacher provides the participants with	**Task 1** (30 min): The participants are given a set of sentences, each containing one type of error (based on Michael D. Kliffer Post-Editing Machine Translation as an FSL Exercise) and are asked to find and name these errors. **Task 2** (30 min): In pairs, the trainees compare their findings. Then they receive a set of cards representing the types of errors according to Kliffer and	**Task 3**: (20 min): The participants work individually. They receive three short extracts from different fields (e.g. medical, technical, journalistic) and try to find and identify the types of errors that occur. Then the results are discussed together.

	texts.	the background of the poem as an example of the imperfect functioning of machines and explains the subject of a class — finding and naming errors that can occur in MT outputs.	try to match these types with sentences. They also evaluate their performance in the previous task. Next, each type of errors is discussed by the whole group.	
Lesson 4	Controlled Language Optimised for Uniform Translation (CLOUT) by Uwe Muegge (2002); worksheet *Lesson 4 worksheet*.	**List composing** (20-30 min). The participants are asked to compose a list of 3 principles that could be helpful when pre-editing the text. The first group write their rules on the board, and the next group are invited to give arguments for introducing these rules. Then the roles change, and the second group state their rules (as long as they are not repeated), and the first group support them. If there is an odd number of participants and, therefore, an odd number of groups, the teacher distributes the tasks in such a way that each group have a chance to support the principles of the other group.	**Task 1** (15 min): The participants are given a form of Controlled Language Optimised for Uniform Translation (CLOUT) by Uwe Muegge (2002) containing free space for additional students' notes and are asked to familiarise themselves with these rules. They also assess whether the list contains their principles or not and rewrite the rules from the blackboard that do not occur on the formal CL list. **Task 2** (20 min): The participants work individually. They are given a worksheet containing a text in English (ST) and a table divided into four categories: selected sentences from ST; MT of selected sentences, sentences corrected according to CL, and MT of a corrected version of sentences. First, the students are asked to read the text and select five sentences they find most problematic and write them in the first column of the table. The students then enter MT of, e.g. DeepL and assess the readability of the output.	**Summary** (25 min): The last task to sum up the CL topic is to correct the sentences from Task 2 according to the rules provided (CLOUT) and entered in Task 1. Then they translate the corrected sentences and compare outputs with the sentences in the second table. The participants are asked to give their opinion on the tasks completed and assess the usefulness of using CL.

| Lesson 5 | printed cards from the file *Lesson 5 the world's most difficult word to translate – cards*, file for students *Lesson 5 terms for students* and answers for teachers *Lesson 5 terms for teachers*, worksheet with texts *Lesson 5 worksheet* | **Game** (10 min). "The world's most difficult word to translate". The participants take turns to pick one English word from the list and translate it into their native language as quickly as possible. | **Task 1** (20 min): Students are handed a list of English terms divided into three categories: medical, EU and technical terms. Each category contains terminology specific to a given field. They first assess their knowledge and ability to translate phrases from the list without using any tools. Then, they assess which tools would be most helpful in preparing translations of terms from each group separately. Finally, the teacher suggests reliable knowledge sources, prepared respectively for each category (diseases: Dictionary Medicine; European Union: https://europa.eu/european-union/documents-publications/language-and-terminology_pl; technical instructions: English-Polish Dictionary of Science and Technology) and with the help of these sources, the participants prepare the translation of the phrases. **Task 2** (30 min): The participants receive a worksheet with three short texts from different disciplines (medical, EU, technical) and choose one. They then extract from the ST words, phrases and concepts which, according to them, may be problematic during translation. After selecting the vocabulary, students justify why the wording they have | **Task 3** (30 min): The participants work independently. The assignment is to translate the text from the previous exercise. The task is divided into pre-editing, i.e. following the CL rules from Class 4, and post-editing, i.e. correcting problematic phrases from the MT output using the glossary prepared in Task 2. |

			chosen might be a barrier to machine translation. Then, they group according to the chosen category of the text and examine whether their choice was justified, i.e. they attempt to MT the phrases. Then, they check the exact phrases with the help of suggested sources and evaluate the correctness of the MT output.	
Lesson 6	A picture depicting a cat lying in front of the computer/mo-nitor (*Lesson 6 CAT picture*), a word file with an article on CAT tools (*Lesson 6 Abstract from Bowker, Lynne & Fisher, Desmond 2010. Computer-aided trans-lation),* a form created by SDL Limited - now part of the RWS Group	**Picture riddle** (10 min). The teacher shows the participants the picture depicting the cat lying in front of the computer/monitor (Lesson 6 CAT picture) and asks them to guess this class's subject. The person who guesses first answers the questions (written on a blackboard): 1. What is CAT? What does CAT stand for? Then the rest of the group join in answering the following questions: 2. Have you ever used CAT? If yes, which one? 3. Do you know how to operate a project in a CAT environment?	**Task 1** (10 min): The participants receive a What is a CAT Tool? Form by SDL Limited - now part of the RWS Group (Lesson 6 What is CAT tool) and tick the statements they think are true. **Task 2** (25 min) The participants watch an introductory video on CAT software (https://youtu.be/5GhX1XA_vsA) or read 'What is a CAT tool? - Video Transcript' (https://www.trados.com/solutions/cat-tools/translation-101-what-is-a-cat-tool.html). After watching/reading, the participants review their answers from 'What is a CAT Tool?'. The participants are asked if they have any questions so far. **Task 3** (40 min): The participants start working with a CAT programme of the instructor's choice, in this case, SmartCat.com free online CAT platform. The participants create a free account on	**Discussion** (5 min): the participants evaluate their experience with the CAT tool and comment on Task 3. It is also time for any questions the participants may have after using the CAT tool.

(Lesson 6 *What is CAT* *tool)*	SmartCat.com and, with the help of the teacher, become acquainted with the different functions of the platform in the following steps: • Open 'My Tasks' • Click 'CREATE PROJECT' • Click 'SELECT A FILE' • Choose a file named Lesson 6 Abstract from Bowker, Lynne & Fisher, Desmond. (2010). Computer-aided translation. (created and distributed by the teacher in advance, the file is a Word document containing an abstract from an article on CAT tools of approx. 250 words) • Click 'Open' • Click 'NEXT' • Write project name or leave suggested name • Define source language as English (United Kingdom) • Define Target language as Polish • Tick 'Use machine translation' • Tick 'Use for free with feedback' • Click on 'Setting on the left' (⚙) • From the list of MT, choose every possible option to see the differences later

		• Click 'SAVE' • Click 'FINISH' • Under the segment Documents, click 'OPEN' next to the name of the created project • Translate the first unit using MT suggestions on the right • Confirm the translation by pressing CTRL+ENTER	
Lesson 7	**Game** (10 min): If this is the answer, what's the question? – The participants form questions to the following answers (all connected with previous class) and create a project on SmartCat: • Click 'SELECT A FILE', • Tick 'Use machine translation' and choose from the list, then click 'SAVE' • Click 'OPEN' next to the name of the created project • By pressing CTRL+ENTER Example answers: How to add a file to a project? How to implement MT to a project?	**Task 1** (35 min): The participants open their projects from the previous lesson on SmartCat.com. The teacher guides the participants through the platform, briefly discussing the various functions: • Confirm all segments • Go to the next unconfirmed segment • Go to a segment by number • Undo the last action • Redo the last action • Copy source to target • Clear target • Insert a special character • Change the case • Insert a tag • Segment length limit • Revert the segment to the previous stage • Open the custom dictionary • Concordance search	**Discussion** (5 min): The participants enumerate functions they have used during their work on the project.

| | | How to open a project and start working on it? How to confirm a segment? | • Merge the segments
• Split the segment
• Search in source
• Search in target
• Case-sensitive
• Replace
• Remove all filter
• Refresh segments
• Filter (and its options)
• History
• QA check
• Comments (segment, document)
• In-context preview
• View options
• Download

The participants may ask questions during and after the tour on SmartCat.
Task 2: (40 min): The participants try to use the discussed functions to translate the remaining segments and finish the project. | |
| Lesson 8 | a video (https://youtu.be/MmsBe7BitG4), *Lesson 8 Translation Memory* form by SDL Limited, TMX file | **Word-chain** (20 min). The teacher gives the first participant a letter; the participant has to say a word beginning with that letter, the participants who follow repeat the word and say another word beginning with the last letter | **Task 1** (20 min): The participants receive a Lesson 8 Translation Memory form and are asked to tick the statements as they watch the video (https://youtu.be/MmsBe7BitG4).
Task 2 (25 min) Creating definitions. The participants work in groups of four. As there are 15 TM terms, the teacher | **Task 4**: (5 min): Discussion: the participants evaluate their experience with TM, how it may influence their translation work and answer if they are willing to start using it. |

of the first participant's word (e.g. lecturer says 'M', the participants one says 'Machine', participant two says 'Machine and Engine', participant three says Machine, Engine and Energy' and so on). Then, the participants answer the question:

- What is necessary to master this activity? (the expected answer is 'a good memory')

Then, the teacher explains the subject of the class: TM and says that they have already created their first TM by completing the project on SmartCat.com. The participants then open their projects and download the file in TMX format, which is the TM. The teacher explains that they can use this file for their next translation project.

divides terms evenly, e.g. if there are three groups, each obtains five terms. The task is to write one wrong definition to each term. The list of terms includes 100% match, alignment, auto-propagation, AutoSuggest, concordance, context match, field, fuzzy match, LookAhead, penalty, pre-translation, segment, TMX, translation unit, uplift. When all groups are ready, they read definitions (correct and wrong), and other groups have to choose, in their opinion, the correct one. After all groups have read their definitions, they exchange correct ones once again.

Task 3 (20 min): The participants go to the SmartCat platform and, with the help of the teacher, learn how to implement TM to a project by following these steps:

- Open My Tasks
- Click 'CREATE PROJECT'
- Click 'SELECT A FILE'
- Choose a file named 'First CAT project' (used previously)
- Click 'Open'
- Next to the segment Translation Memories, click 'ADD' and choose the previously downloaded TMX file
- Click 'Open'

| | | | • Click 'NEXT'
• Write project name as TM check
• Define source language as English (United Kingdom)
• Define Target language as Polish
• Click 'SAVE'
• Click 'FINISH'
• Under the segment Documents, click 'OPEN' next to the name of the created project
• Evaluate how TM changed the translation in comparison to the first project without TM | |
| Lesson 9 | game on wordwall (https://wordwall.net/play/15920/911/927) or printed (lesson-9-tm-quiz.pdf), a video (https://www.youtube.com/watch?v=ACW9VFDwmww), files *Lesson 9 TM terms*, *Lesson 9 Glossary CAT project file* | **Wordwall quiz** (5 min). As a warm-up activity, the participants play a quiz in pairs. They receive a link to the game on a wordwall (https://wordwall.net/play/15920/911/927) or printed (lesson-9-tm-quiz.pdf), where they have to choose the right one out of 4 possible alternatives. When all the participants are finished with the game, they answer whether it is challenging to choose the correct word knowing the context and having the hints. | **Task 1** (20 min): To better familiarise the participants with the topic of the lesson, they watch the first 5 minutes of the video "What is terminology management?" prepared by SDL Limited, which is now part of the RWS Group (https://www.youtube.com/watch?v=ACW9VFDwmww), and note answers to the questions:
• What are the three key elements of the terminology management process? Answer: identifying, storing and managing terminology.
• What is the name of the place where terminology can be | **Discussion** (5 min): The participants evaluate their experience with the terminology management process, how it may influence their translation work and are asked if they are willing to start creating their own term bases. |

stored? Answer: termbase
- Is the termbase multilingual? Answer: yes.
- Are termbase and translation memory similar? Answer: The former stores single words and short phrases, while the latter even stores whole sentences, longer fragments.

Task 2 (60 min) The next task addresses the question: What does terminology management mean in practice? The participants start working on creating a glossary in the CAT work environment and follow the instructions below:
- Log onto https://smartcat.com/workspace
- Go into 'My linguistics assets'
- Click 'Glossaries'
- Click 'CREATE GLOSSARY'
- Enter glossary name as DEMO 1
- Set language 1 as English
- Set language 2 as Polish
- Click the sign '+' and choose language 3 as German
- Click 'SAVE'
- Then click 'ADD ENTRY'
- Enter the terms from file Lesson 9 TM terms
- After adding each of the terms,

			click the tick sign to confirm your entry • Then click 'BACK' • Create a new project on SmartCat with the file Lesson 9 Glossary CAT project file • Go to 'LINGUISTIC ASSETS' • Tick glossary named 'DEMO1' • Go back to the project and open it • To translate the file use suggestions from the implemented glossary. Phrases from the glossary (DEMO1) are highlighted, in the bottom right part of the page, click CAT info□Glossary demo1□ Go to term • Finish the project	
Lesson 10	files: *Lesson 10 scenario fast translating, Lesson 10 scenario fast translating – glossary,* website https://help.smartcat.com/hc/en-	**Scenarios discussion** (15 min). Scenarios to discuss: • A client sends in a so-called draft text on the reorganisation of the company's work and asks for it to be translated on short notice, assuring that it does not have to be perfect but fast.	**Task 1** (reading 10 min + project 60 min): The participants open the website: https://help.smartcat.com/hc/en-us/articles/115002017352-Quality-assurance and read the content. Then they receive a scenario for the project: • A client sends a short text that she wants to quote in her article on the impediments to astronomical research and measurement due to external	**Task 2**: (5 min): Discussion: the participants evaluate their experience with the QA, how it may influence their translation work and are asked if it facilitated their performance.

| | us/articles/115002017352-Quality-assurance | • Question for the participants: What will the translator do?
• A similar situation —a client sends a text, also a draft, this time concerning side effects of a new drug and again asks for it to be translated on the spot, at the same time assuring that it does not have to be perfect, but fast.
• Question for the participants: What will the translator do?
• Do both situations require the same or a different approach to the translated text? | interference. The client also reports that she has tried to use MT for translation but does not know why the TT is unintelligible. She is very anxious about time as the deadline ended a week ago. Fortunately, a translator (here participants of the course) has worked with this topic before, so he/she has a glossary ready.
The participants log onto SmartCat. They receive two files: one with a text in English to translate into Polish, the other with a pre-prepared glossary needed for the project. First, they go to *My linguistic assets*, create a new glossary, and then click upload□choose file□IMPORT. They create a new project called scenario – fast translating. They are allowed to use MT of their choice and perform task independently, but still, the teacher assists if needed. They are asked to remember about assigning the glossary to the project. | |
| Lesson 11 | Files: *Lesson 11 ST The US President Invites King Hassan of Morocco,* | **Back-translation** (30 min). The participants are divided into row A and row B. Each person receives two short texts translated into Polish: one is the so-called raw MT output, | **Task 1** (15 min): The participants receive light and full post-editing guidelines and familiarise themselves with each. Then, in pairs, they discuss what the differences are between light and full post-editing. Each team gives | **Task 3**: (5min): Discussion: The participants evaluate their experiences with LPE and FPE, compare this stage of the MTPE process with pre-editing and translation, and estimate their workload for each step. |

	Lesson 11 Light and Full post-editing guidelines, Lesson 11 A B The US President Invites King Hassan of Morocco (pl), Lesson 11 Worksheet light and full post-editing	and the other is the post-edited version. In row A, the first text is the raw version, while in row B, the exact text is the post-edited version, and in turn, the second text in row A is post-edited, and in row B, the same text is raw. Now, the participants are asked to back-translate the texts into English. Afterwards, students from row A compare their versions with students from row B. They answer the questions: • Are the backtranslations from row A and row B different? In what way? • What was more accessible to back-translate – the post-edited or raw version? • What are the conclusions?	two examples in which situations light and full post-editing can be used. **Task 2** (40 min): The participants receive a worksheet with MT output and, without the ST, do light post-editing according to the light post-editing guidelines. Then they receive the source text and perform a full post-editing, but also following the guideline.	
Lesson 12	Files: *Lesson 12 Article: Is the Internet killing our brains*	**Translation chain** (10 min). The participants are divided into groups of four. The teacher informs students about the warm-up rules:	**Task 1** (15 min): The teacher gives the students a scenario for the lesson: You work in a translation agency, and your team specialises in MTPE. Each person in the group is responsible for a particular stage of the MTPE process:	**Discussion** (5 min): The teacher asks the participants how they evaluate the teamwork on the project.

		- Person A expresses in English his/her view on the statement that the Internet is killing our brains. - Person B summarises A's view to person C in Polish. - Then Person C repeats B's summary to person D in English. - Finally, person D refers received information to person A. - Then person A assesses the level of agreement between his/her opinion and what he/she heard from person D. Summarising the exercise, the teacher asks each group how they assess the level of agreement of the final version of person A's statement.	- person A assesses the original and makes the necessary corrections to the sentences of the ST so that the text is more accessible to MT, - person B assesses the text for vocabulary and prepares a glossary, - person C receives the corrected text of the ST and the glossary and carries out the machine translation, - person D deals with the post-editing of the text without seeing the ST. The participants in the group divide themselves into roles, with a hint that they can also use the draw of lots (provided by the teacher). The translation is carried out in any environment, e.g. on the SmartCat platform.	
Lesson 13	Files: *Lesson 13 Literary translation.*	**Find the match** (10 min) Participants, working in groups of two, are asked to match English proverbs with	**Task 2** (60 min): Competition: Students are divided into two groups: group A and group B. Group A is to translate the first page of the file provided (an extract from	**Task 3** (15 min): Evaluation of translation and discussion: Group A compares their translations of two passages with Group B's translation. Together they evaluate which

	their Polish equivalents. Next, they receive a list of the same proverbs, but translated using MT, and evaluate the possibilities of machine translation in relation to such elements characteristic of literary translations.	the untranslated book Malcolm X: A Life of Reinvention By Manning Marable) using HT, i.e. without MT and CAT tools, but are allowed to use dictionaries, including online dictionaries; group B translates the same fragment using the CALT method with the help of MT, e.g. on the SmartCat platform. Both groups have 30 minutes to complete the task. After the time is up, the groups swap roles. Group A translates the second page of the file using the CALT method with the help of MT, while group B performs HT. The participants in the group divide themselves into roles, with a hint that they can also use the draw of lots (provided by the teacher). The translation is carried out in any environment, e.g. on the SmartCat platform.	method in a given situation (literary translation) was better for them and why; they also evaluate the quality of the translated passages in terms of the differences between machine-assisted and human translation.
Lesson 14	Website launched for the purpose of this course https://www.te st30148.future host.pl/MTPE/ the details to log onto the website would be provided to	**Task 1** (15 min). The participants answer whether they use MT of websites, e.g. with the help of Google Website Translator. They then familiarise themselves with this function by going to https://www.visitqatar.qa/en/th ings-to-do/wellness-spa and activating the website	**Task 2** (60 min): The participants are introduced to the lesson scenario: The Visit Qatar organisation has commissioned you to analyse and improve MT (from English to Polish). Follow these steps to start your post-editing work: • log onto https://www.test30148.futurehost .pl/MTPE/wp-admin/ according	**Task 3** (15 min): The participants evaluate the quality of MT made by the WEGLOT plugin and their work on the MTPE of the website. The teacher asks the participants how they imagine the future of translation.

participants by email, each participant would have a separate account.	translation function (right mouse button□przetłumacz na język polski (translate into Polish). The participants read the MT of the mentioned page and rate on a scale of 1 to 5 the quality of this translation (1 means very poor and 5 excellent).	to the details sent by the company, • go to the WEGLOT plugin • click on Edit my translations • then click on Total translated words • analyse the phrases that require your intervention, and then apply corrections.	
Lesson 15	**Task 1** (15 min). The participants work in pairs. Their task is to write down what qualities they think a post-editor should have and how this role differs from the traditional role of a translator. Then each pair shares their thoughts.	**Task 2** (45 min): Discussion: The participants are asked to address issues related to the development of MT: • MT limitations —will post-editing solve all problems of MT? • Indigenous, regional, minority languages and MT —what does it look like? • Is post-editing in literary MT the answer to books that should have been but were never translated? • MT and democratisation • What does the future hold?	**Task 3** (30 min): The participants are asked to write an essay in which they evaluate the MTPE course they have taken and how prepared they feel to be an independent post-editor.

Supplementary sources of information

The lessons were also supplemented with the following additional sources of information:

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- RWS Holdings PLC, & Goldsmith, E. (n.d.). *An introduction to Translation Memory Management by TRADOS* [E-book].
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5. Challenges to implementation and concluding remarks

There may be several challenges to the implementation of the course. Meeting all the stated objectives and outcomes will be a challenge as it assumes that each lesson will follow the outlined structure without interruptions. Unexpected situations, such as questions from the participants, the need to repeat material, spontaneous discussions during the lessons, may result in modifications to the programme. A related issue is time estimation. The author also assumes that there may be different results for classroom training and remote modes of course delivery. In addition, the discrepancy in results may be related to the students' level of expertise, which may affect the course outcomes. Finally, the very structure of the course may be subject to revision due to the pace of

development in the field of translation technology. In conclusion, during the implementation and delivery of the course, teachers must remain vigilant and relatively flexible. They are required to consider many factors such as unexpected situations, technological developments, and participants' reactions.

Further research based on the individual elements of the course is recommended. Lesson 3 (MT – Finding and naming errors) could be expanded to include a broader analysis of errors since, as Depraetere (2010) notes, a clear demand to expand students' knowledge of specific MT errors should be addressed. Given the emphasis that Nikishina (2018) and Tomaszkiewicz (2019) place on consistency and precise instruction in the training of future translators, it is worth adapting Lesson 4 (Controlled Language rules for MT: create your own list of pre-editing rules) to explore supplementing guidelines specifically designed for specific language pairs, in this case, PL-EN. Finally, Lesson 13 (Competition: Human VS MT), which is grounded in Rybicki's (2021) observation that the difference between human and machine translation is becoming less and less apparent in light of the progressive development of neural machine translation, may inspire further research into the problem of the changing image of the modern translator. In conclusion, this study can be a valuable resource in both translation didactics and translation studies, providing an impetus for further consideration of the topic of MTPE.

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