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„Machine translation in learning and teaching foreign languages in Austria: What are current attitudes towards NMT tools among foreign language teachers in Austria?"

verfasst von / submitted by

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Wien, den 07.02.2024

Evelyn Gallhuber

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1. Introduction

Neural Machine Translation (NMT) tools are everywhere. Apart from their influence on translation studies and translations as a profession they have found their way into everyday life. NMT tools accompany people on their smartphones, laptops, tablets, and presumably any other item that connects to the internet. NMT is easily accessible and very often available at no financial cost. Thus, it makes sense that many people make use of NMT tools. According to Google's blog, more than 500 million people used Google Translate as far back as 2016 (Google 2016). This number is likely to have gone up in recent years not only due to geopolitical circumstances that have been causing people to flee from their homes, but also because of a shift towards online communication and learning because of the Coronavirus pandemic.

This research is inspired by the experience of being a children's tutor for German, English, and French and acting as a language teacher for adults learning German as a second or foreign language for over four years. The experiences made are what first sparked the interest in NMT and foreign language learning.

As the topic was found worth investigating, the building on existing research on (N)MT and language learning (Bowker 2020; Chung & Ahn 2021; Garcia & Pena 2011; Larson-Guenette 2013; Lee 2021; Niño 2004, 2008, 2009, 2020; O'Neill 2014, 2016, 2018; …) began. It seems obvious that the topic is relevant for language education, but one might wonder why it is relevant for translation studies. First of all, NMT is a huge topic for translation studies, it is changing the way translators work on a daily basis. Second, the literature, which will be reviewed in the next part of this thesis, but also the conclusions that were drawn by Lewis (1997) and Somers (2003), relatively long before the introduction of NMT, stating that students of translation studies should have knowledge about MT, and the work of Bowker and Buitrago Ciro (2019), who call for a wider-spread machine translation literacy, indicate that language education is highly relevant for translation studies. After all, knowing languages is the foundation for translating.

General knowledge about NMT and how it can be used by language learners and proficient speakers of any language, who might just as well be future students in the translation field, can help create a better understanding of translators' way of working and why translators remain very important in societies across the globe now, in the age of NMT

and AI, as ever. Therefore, NMT in connection with learning foreign languages is well worth exploring and pursuing.

After introducing the topic, the following content will be part of this thesis: in the theoretical framework, a literature review will first give an overview of MT and language teaching and learning across time and countries. Afterwards, the literature surrounding this topic in the German-speaking and -learning area will be presented. Following, establishing gaps in the former research will lead to the research questions of this thesis. The research questions, as well as the methodology used in the practical part of this thesis, specifically Mayring's Qualitative Content Analysis, will be presented. Next, the online survey and the interviews are discussed. Important parts of the online survey and interview questions can be found here as well. The findings of both the interviews and the survey will be presented afterwards. Next, these findings will be put into context and discussed. The research questions will be answered. A conclusion and a lookout on future research will follow and finally, the limitations of the study will be disclosed. A list of sources and the annex with the detailed survey questions, interview questions, the complete Qualitative Content Analysis and the abstracts will complete the thesis.

2. Theoretical Framework

2.1 Machine Translation and foreign language learning across time and countries

MT in the language learning classroom is a topic that has been catching the attention of researchers in many countries and has been part of scholarly research for a relatively long time now. In this chapter, a review of the worldwide literature relevant to this thesis can be found. The literature is mostly presented and sorted according to the timeline of its publishing. Wherever there are exceptions, an explanation for this decision is given. The literature review journey of this thesis starts in the 1990s and concludes with literature from 2023.

In the 1990s Derek Lewis published an article about the at the time standards of MT and his experience in using it as a tool in teaching translation studies and recommendations on how to use MT output for pedagogical purposes. In this 1997 study, Lewis describes a class in which students are supposed to find out about the possible capability of MT and its confines on their own to the end of being able to decide which MT systems might be practical in their future. Lewis found that students with a higher proficiency level were more invested in exploring MT, whereas students with a lower proficiency level did not benefit as much from MT itself as they tested it less extensively. They were, however, motivated to try and find out more about the basic sentence structures needed for the MT system to work well. He states that the students who explored the tool used at his university thoroughly developed a more positive and realistic attitude towards MT than their other colleagues. Nevertheless, he finds: “It would, of course, be foolish to claim that a study of MT should be part of the standard repertoire of language-learning activities.” (Lewis 1997: 270). He does not give a reason, but it seems to make sense since at the time MT was not as widespread as today, hence, one could think that it was unnecessary to introduce MT into language learning in general. However, altogether Lewis expresses the usefulness of MT in the translation studies curriculum and adds that it might be beneficial for students to gain knowledge about it when they are looking for employment (Lewis 1997).

Somers (2003) by contrast, describes several aspects in his article, differing between the different language education target groups. He describes four ways of using MT in the classroom, related to the kinds of teaching focuses:

> [O]ne is teaching about computers and translation for its own sake, as part of course in one of the contributing fields such as linguistics, computational linguistics, computer science, information technology and so on. […] Another […] is teaching trainee translators and other professional linguists about translation software. A third is the role (if any) of this software for teaching languages. Finally, end-users provide a further perspective on the question of how to teach MT. (Somers 2003: 319)

As this thesis is focusing on foreign language education, only the third way is described further. Somers suggests that MT and translation software should be a part of foreign language learning because translation is a method in language class and mentions that other scholars before him, such as Patrick Corness in 1985 and Janet Ann De Cesaris in 1995, suggested using it as a computer-assisted language learning tool. The latter two are not part of this thesis; their ideas, however, inspired some of the research presented here. Somers suggests that tools that are corpus-based could be used in addition to dictionaries as these tools can provide more suggestions on how to use words in a context. He refers to the author Janet Ann DeCesaris, who states that translation software is a reliable source for learners, as the contents are easily accessible and certainly accurate. (Somers 2003) It is important to mention at this point, that today the initial situation is different. NMT tools are corpus-based as well, however, there are text parts that the tool produces on its own. This means that on one side more output can be generated, but on the other side this output is not monitored by a human professional, which makes the certainty of its accuracy questionable. It is left to the language learners to figure out how accurate the NMT output is. It seems sensible that a learner would need to be on a higher language level to make this distinction. According to Somers (2003) one way of including MT in the curriculum for advanced learners is to use MT output as a draft translation and then to create a final translation by post-editing and commenting on it. Somers added specific exercises for this purpose to his article and appended a key to them as well. In Figure 1 some of these exercises can be observed and in Figure 2 the corresponding answers can be found.

French examples:

1. L'oiseau entra dans la chambre. L'oiseau entra dans la chambre en sautillant.
2. Charles se suicida.
3. On a donné le livre à Paul. On a dormi dans ce lit.
4. Nous venons de finir de lire ce livre.
5. Mon cousin est beau. Ma cousine est belle. Ma cousine est riche.

Figure 1: Exercises by Somers (2003: 321)

Key to exercises

French examples:

1. *MT output:* The bird entered the room. The bird entered the room hopping.
Preferred translation: The bird flew into the room. The bird hopped into the room.
French verbs of motion incorporate the direction (*entrer* 'enter', *traverser* 'cross') and must specify the manner separately (*en courant* 'running', *à la nage* 'swimming'). In English, it is the other way round: *run into*, *swim across*. In the second example, the best translation is *hopped into*. This gives a clue also to the translation of the first example: *enter* is of course the literal translation, but *flew into* might be more natural if you consider that French would not say *entra en volant* if the subject is a bird.

2. *MT output:* Charles suicided himself.
Preferred translation: Charles committed suicide.
Does the dictionary have this semi-idiomatic phrase?

3. *MT output:* One gave the book to Paul. One has slept in this bed.
Preferred translation: Paul was given the book. This bed has been slept in.
French uses the impersonal construction with *on* whereas in English a passive construction is more natural: in French, passives can be formed by "promoting" direct objects to subject position, but not indirect objects or prepositional objects.

4. *MT output:* We come from finish to read this book.
Preferred translation: We have just finished reading this book
Another idiomatic construction.

5. *MT output:* My cousin is beautiful. My cousin is beautiful. My cousin is rich.
Preferred translation: My cousin is beautiful. My cousin is handsome. My cousin is a rich woman.
This example involves "compensation": French distinguishes the gender of *cousin(e)* whereas English does not. On the other hand, English distinguishes *beautiful* and *handsome*, so we can compensate for the neutral gender of *cousin* by choosing an adjective which shows the sex of the cousin. A different strategy must be adopted for *rich* however.

Figure 2: Answers by Somers (2003: 338)

Using MT as a bad model is also a possible approach. It can be helpful to understand grammatical differences between languages, especially if the bad model text is the first language (L1) version since most learners will have enough proficiency in their L1 to identify the mistakes made by the MT tool. It must not be forgotten that a bad model text in a foreign language could lead to confusion and cause the language learners to memorise the mistakes of the text because they might assume that MT is always right. Another approach presented is to give students a source text and a target text without mistakes and to ask them to pre-edit the source text until the MT tool produces a correct text, which is another way of working out the grammatical differences between the languages. This approach eliminates the danger of

memorising inaccurate information. (Somers 2003) However, this approach might not be the best way to implement MT tools, especially today's NMT tools into a language learning curriculum, because it focusses less on the technology and practicability of the technology or even making use of its features but more on the differences between the languages, which probably could be worked out in different less complicated lesson-settings. Including NMT this way seems overly theoretical and impractical for an actual practical application of NMT in the classroom and does not fit the idea to implement it into the curriculum in a sensible way. The last option of using MT in the classroom presented by Somers is an exercise with two sections. First, the students create a draft translation with the help of a computer program called TranIt-Tiger, which provides them with hints and clues in terms of vocabulary and grammar. A teacher will give them feedback on the areas the students still have to work on. Then they are further provided with two translations of the same text and from all the information create a final translation (Somers 2003).

Niño (2004) also explored the possibility of using MT for another purpose than it was first intended for. She investigated the possibility of using foreign language MT output in its original state for teaching foreign language writing skills and enriching vocabulary as much as syntax. It is emphasized that this was an innovative approach in terms of language learners because compared to earlier studies, in this experiment the language learners were not trainee translators but advanced foreign language learners. After reviewing differences between revision and MT output post-editing she states: "[…] (W)e believe that MT output provides basic linguistic structures which learners can build on and thus improve their language competence" (Niño 2004). In her experiment, the teacher is supposed to create exercises using MT focussing on certain grammar and vocabulary contents. The learners are required to modify these MT translations and draw lessons from the mistakes as much as the already well-translated text. After a pilot study, she could conclude that MT post-editing seems to be a useful exercise in foreign language learning, especially when working in the target language. She states: "[…] (W)e recommend MT post-editing as an activity to promote accuracy and therefore grammatical, lexical and stylistic correctness […] (Niño 2004). As a result of the research Niño planned to create an MT translated "learner corpus" (Niño 2004) and compare it to a second corpus of computer-unassisted student translations to the end of gaining more insight into mistakes made by language learners in MT post-editing. Recapitulating she suggests presenting MT output as something that requires peer-editing in class. Through doing so learners should gain awareness that it is important to autocorrect texts. It should promote autonomy in learning as well. At the time it remained unclear if the

use of MT output could improve learners' text production capacity. According to the author, raising learners' acknowledgement of the necessity to edit MT output is only the initial step in researching if editing MT output can improve text production skills (Niño 2004).

Kliffer (2005) wanted to give students an understanding of MT by doing a post-editing exercise. The students were advanced learners of French, attending a university class where they translated from French into their L1, English, but were not translation students. Due to this fact texts with a more general core theme instead of specialized texts were used in the experiment. At the time MT was still restricted to very specific topic fields and not as elaborate as today, yet Kliffer found post-editing a suitable exercise because it shows students what MT is capable and incapable of and redacting the MT output gives them further translation practice. He recommends MT post-editing for teaching languages because of that and because it is unnecessary to focus on the mechanics of MT for this purpose. (Kliffer 2005) At this point it is important to mention, that learning how MT works, can, nevertheless, be helpful in comprehending the backgrounds of MT errors and therefore create a clearer understanding of situations in which the use of these tools is sensible and in which it is not. In Kliffer's experiment, Power Translator Pro was chosen as the MT tool. For the post-editing exercise, the students received the original text and the MT output. After the experiment, Kliffer found that post-editing MT output created mixed reactions among his students:

> "Overall, the weaker students appreciated the exercise more than the stronger ones, some of whom found there were too many "stupid" errors. For the weak ones, evaluating a translation and correcting its mistakes proved to be less stressful than doing a translation entirely by themselves." (Kliffer 2005:165)

The goal of the experiment was reached as the students gained experience with MT and came to an understanding of the basics of human language. As a next step, Kliffer planned an exercise in which the students would have to post-edit MT output in their foreign language (Kliffer 2005).

Kliffer continued his research in 2007 and for his research switched the language direction of the experiment from English to French, which was the foreign language in this case, thus creating a foreign language exercise based on post-editing MT output. He aimed to assess the differences between students' manual translation and post-edited MT output, as

well as the students' opinions on the usefulness of the exercise. To contrast the translation and the post-edited MT output, Kliffer compared the error counts of both production types. The error count was based on error categories he established through revising his student's texts. It turned out that the difference between a student translation without MT and a post-edited MT output was insignificant. The difference between unedited MT output and both student translations and post-edited texts, however, was more obvious, the mistakes in the raw MT output were double or triple the count of the other texts. Kliffer also, but not exclusively, compared the error rates of the exercises depending on their language direction. To get a gist, post-editing exercises from L2 to L1 had 3.5% errors on average, L1 to L2 exercises 7.2%. Regarding the opinion of his students, he concluded similarly to his earlier experience: students with a higher language proficiency were irritated by the exercise because there were too many low-level errors for them to benefit from it. Students may gain a first insight into post-editing but do not have enough experience to form an informed opinion about post-editing. Intermediate and low-level students, however, benefitted from the exercise because they understood the importance that comprehending the source text as a connected unit carries for translation (Kliffer 2008).

Focusing on the flaws of web-based MT (WBMT), particularly concerning French, and providing suggestions for integrating WBMT into the language learning curriculum to keep learners from misusing it was the aim of a study by Lawrence Williams. He suggests that making WBMT part of the curriculum could lead to greater technology literacy. He states that learners will realize that MT is not a suitable tool for learning languages once they tried and observed it. Working out the aspects of WBMT will also equip learners with the skill of critical thinking which they can apply in any area. Williams goes on to analyse errors of different MT tools organised by grammar issues. He suggests that an exercise that is based on translating expressions that need particle verbs in English will be very convincing, because this grammatical structure poses one of the biggest differences between English and French since everyday procedures very often require particle verbs in English but not in French. He states:

> "If students can see that communicating in another language is not simply a matter of plugging words into a formula that can be calculated by a machine, they will begin to understand language and communication as complex and multilayered."(Williams 2006:572)

The researcher presents a full set of exercises to prepare learners for dealing with WBMT, among others comparing the MT output regarding single words to the information regular dictionaries provide. He concludes that learners will understand that WBMT is more suitable for language issues that are more of a leisure time problem, for example understanding basic information on a website in a foreign language. If the learners are guided well by their teachers, they will be able to judge whether WBMT is a fitting tool for their exercises. To prepare language learners for the 21st century, Williams calls for teaching students to find, use, and especially not misappropriate all kinds of new tools (Williams 2006).

Ana Niño after her 2004 study continued to enquire about the use of post-editing MT output in the classroom and published again in 2008. She conducted an experiment with 32 learners of Spanish who spoke English as their first language and compared the learners' post-edited MT output to the raw MT output via computer-aided error analysis, which was a new approach at the time. She expected to find patterns in the mistakes of the learners to identify problematic fields that, among other things, lead to advancing MT post-editing as a teaching method. The learners were divided into two groups, one performing MT post-editing, and the other manually translating the same text that also served as MT source text. The post-editing group completed an introductory course about MT post-editing before completing the task. They had one week's time to complete the task and had peer-feedback sessions in between. It is important to mention that there were no restrictions in terms of aids they could use for post-editing. The comparative computer-aided error analysis revealed that the students' post-edited texts had fewer errors than the MT output and the manual translation of the other students. She also found patterns in the MT output corrections by the learners and could draw the following from this experience:

> "This suggests that, if the teacher controls the input text in such a way that the MT output errors are relevant and appropriate[3] for the students, post-editing into the foreign language can provide an excellent form-focused activity that can help the students develop their grammatical and lexical accuracy." (Niño 2008: 42)

The author concludes that post-editing exercises are suitable for advanced foreign language learners as they trigger error and language awareness. Further findings were that error types found in the MT output showed similarity to the ones in the manual translations. Apart from that, input selection, output modification, interaction, language practice,

communication, feedback, and referencing are referred to as highly important for introducing language learners to MT use (Niño 2008).

In the following year Niño published a study about language learners' and teachers' opinion on MT in foreign language learning. She presents four established ways of implementing MT into the language classroom: using MT as a bad model, focussing on mistakes in the target text; using MT as a good model, for checking the target text; pre- and post-editing, and translation quality assessment, focussing on handling MT tools; and using MT as a computer-assisted language learning tool, "tackling language difficulties regarding grammar, context, denotation, connotation, register or cultural references" (Niño 2009: 244). She goes on to explain positive and negative aspects MT holds for language learning (for example online availability, quickness, available languages, translation ability and accuracy of the tools, and authenticity of the MT output). Following she writes about students' opinions about MT in language class. This will not be described further, as this thesis focusses on teachers' opinions. She found that teachers were aware of MT tools, but only few tried it for languages they knew. Some, nevertheless, tried it for languages they did not speak. The teachers who had tried MT tools found that the quality of the output might pose a problem for weaker learners, usefulness in class was questioned, the necessity of a certain language level to be able to handle the MT output was criticized, and it was deemed not to be useful for speaking activities that usually prevailed in class. Most teachers however hoped to implement MT into their language classes once its quality improved. Niño found that teachers were mostly unaware which teaching options MT already provided. In general, however, she saw a positive attitude towards MT tools among language teachers. (Niño 2009) The survey and interviews in this thesis mainly build on the survey used in this study.

Garcia and Pena felt that former research left a gap in terms of foreign language learners with a low language proficiency level, in other words, beginners. Their aim was to find out if MT could be helpful to beginners in developing their writing skills. The participants in the study were 16 Australian students of Spanish at a CEFR language level between A1.2 and A2.3. The authors worked with a repeated measures research design which allowed for all learners to write both with and without the help of MT. There was one exercise for all levels and one specific to the participants' language level. To be more specific, all students wrote one text directly into Spanish and another one with an MT draft as a writing aid. The learners' screens were recorded. At the end of the exercises, participants were asked to reflect on their feelings about how well they did, and their opinion on MT as a writing aid. Analysing the data showed that having an MT draft as an aid helped the learners to

communicate more and minimally better. It is concluded that the use of MT helps beginners to write more. The less they know the more helpful it is to them to use MT. However, language learning per se might not have increased. The authors state that according to the learners themselves there is a danger of indolence in terms of doing their writing. According to Garcia and Pena, it is impossible to avoid or prohibit MT completely and they suggest that further research should be conducted regarding best practices concerning MT use for language learners at a low proficiency level (Garcia & Pena 2011).

Research about students' use and instructors' opinions on MT at Duke University was conducted by Clifford, Merschel and Munné (2013). They had Spanish and Romance language learners and teachers fill out a survey and were able to draw some interesting findings from it. Students used MT similarly to dictionaries, they looked up single words, used it to understand instructions and verify their work. In their first survey, the participants were the Spanish language learners, and the questions surrounded the topic of the first stages of text writing, to be more specific researching and producing the first draft of a text. It was found that the majority of learners used MT for their Spanish class. The second survey included more learners of various languages and the survey itself was adapted to get further insights on MT-using habits among learners. They found that: "(t)he three most common practices for translating from English into the target language are to check vocabulary and grammar (54%), writing (43%), and pre-writing (42%)" (Clifford et al. 2013:111). The learners could choose all applying options, hence, these results show that MT is used before and during writing and for reviewing the text. Learners were also asked about their perceptions of MT. So were the instructors in a third survey. The survey used in this thesis also builds on the third survey of this study, which is why the results found by the researchers are of high interest. They found that using MT is limited and restricted often, some teachers consider MT use plagiarism, that using MT cannot replace learning a language and that MT tools are not seen in the same way as dictionaries. Teachers were also asked if they found MT tools useful for learning a language and most of them said that it depends or that it is not. One further question brought the topic of MT's future in language education to the centre. The researchers found the following:

> "On one hand, we find faculty who see MT as a burden or as a tool unsuitable for language learning, and who fear that MT will contribute to the elimination of language programs. On the other hand, we find faculty who envision the greater integration of MT in the foreign

> language learning process and who demand the acknowledgment of the existence of such tools by the teaching profession." (Clifford et al. 2013:115)

The researchers conclude that learners find MT helpful regarding language and vocabulary learning, and they express awareness that MT output must be regarded critically. Teachers are not sure regarding a positive influence of MT on language learning and do not feel threatened by it in terms of work matters. The authors themselves express a positive attitude regarding including MT into language learning curricula - they conclude that it might be a means to promote critical thinking, and state that MT is always evolving and as a seminal technology should be a part of language training (Clifford et al.2013).

Online MT as a pedagogical tool in the Spanish classroom has been further explored in the context of academic dishonesty by Correa (2014). The aim of the study was to define the differences between online MT tools and online dictionaries, and to assess how online MT can be detected and prevented. The world wide web and technological developments have changed learning and teaching. What was once unethical is now recommended, for example spell- and grammar checking, and collaboration is trending, the author states. In this context the researcher suggests using MT in terms of attempting the minimalization and discouraging of academic dishonesty in the classroom and raising students' metalinguistic awareness. The author uses an easily understandable metaphor to explain the difference between online dictionaries and online MT:

> I would equate the use of a dictionary to the use of a calculator and the use of an OT to the use of a spreadsheet where all the formulas have already been entered. Although using a calculator might be allowed in some classes where the emphasis is not on the four operations, the use of a spreadsheet that generates the answer to a math problem would be more questionable. (Correa 2014: 4)

The author suggests the prevention of inappropriate MT use not by banning its use, but by praising ethical behaviour in terms of making use of MT. Regarding the detection of online MT use, she describes some typical problems that occur with MT. However, an emphasis is put on recognizing it by noticing discrepancies between the students' usual performance and conspicuous irregularities in it. She concludes that valuable exercises incorporating online

MT are pre- and post-editing, as well as attempting to challenge the machine, so students can realise and draw self-confidence from the fact that they might be more skilled than the MT tool. Even though the use of online MT tools is not classical cheating, according to the author, it should be made clear that it is academic dishonesty regarding language learning. The use of MT tools in everyday life should preferably be separated from its use in the foreign language class (Correa 2014).

The impact of using MT on texts written by learners of French at an intermediate language level was the subject of a study by O'Neill in the same year. The aim of the study was to find out whether the texts of students using MT in the writing process were better than the ones of students not using MT, and if it was possible for teachers to recognize a text influenced by MT. Students were separated into three different exercise categories. One group wrote a text without an MT tool, one group was allowed to use an MT tool but was not instructed first, and the third group was allowed to use MT tools and was also instructed on online MT tools. Pre- and post-tests were also a part of the study to evaluate the basic level of the students before and after the experiment. Results of the study showed that the student's levels were similar to each other's during pre-testing. After separating students into different groups, those who were instructed on the use of MT wrote better texts than the ones not using MT. The group using MT without instruction scored points laying in between the other two groups but there was no significant difference to any of the other two groups. The students using MT with or without instruction surpassed the others in terms of grammar, spelling, content, and comprehensibility. The group not using MT did not do better than the others in any case. During the post-testing phase all students wrote a text without using MT. The basic level had not changed in any group, scores were similar to pre-testing. Instructors were able to correctly recognize if MT had been used or not in many cases but not in all, and 29.3% of mistakes were falsely judged to be due to MT use, which makes penalties for the use of MT redundant as there is a danger of penalizing a student that actually did not use MT. The author concludes that more research is needed before deciding on a best practice method for implementing MT into the language learning curriculum (O'Neill 2014).

A study that explores the use and perception of MT by Spanish students and instructors at university Spanish programs in the US was published by Jolley and Maimone in 2015. The main aim of their article is to paint a picture of the use of and opinions about free online MT and to recommend how to approach the use of MT in the language classroom. In this article the authors focused mainly on Google Translate. In order to find answers, during two semesters, two online surveys were conducted, one for teachers and one for language

learners. Data analysis revealed that learners thought that most instructors were completely against the use of MT, while in fact, the instructors' views on the subtopics in the survey about MT were not that negative. Instructors thought that students would heavily depend on MT tools, which was not true either, a part of students never or infrequently uses MT and around 15% fewer learners use MT tools frequently than expected by the teachers. A bigger part than suspected, however, always uses MT tools. Both groups were in agreement that MT and plagiarism pose a problem, more precisely that there is no universal judgement on the use of MT and plagiarism, but that the status of academic dishonesty depends on how MT is used. Students and instructors agreed as well upon the idea that instructors should properly introduce and train students on the suitable and efficient use of online MT tools. The latter is also recommended as best practice by the authors, as well as the proclamation of clear and conclusive rules regarding the use of MT in language classes (Maimone & Jolley 2015).

A first quantitative approach comparing learners' texts written without the help of MT to texts that were written with the help of MT was taken by O'Neill (2016). For the experiment, two groups were formed among participants who wrote texts with the help of MT. One group was instructed on MT in general and its use, the other group used it without being instructed first. The third group was not allowed to use MT and accordingly was not instructed on it. The English-speaking learners of French had to fill out a questionnaire regarding their biographical information, then they completed pre-tests in reading and writing. The next step was attending an instructional session before completing two writing exercises with one week's time in between. Finally, a written post-test was conducted and a self-report questionnaire right afterwards. The results of this study oppose some former findings, to be more precise, the author did not find that texts written with the help of MT were automatically of a low quality. The group using MT outperformed the other group. It remained unclear though if using MT for writing should be recommended because long-term effects on this skill were not inquired. The author suggests further research in terms of the effectiveness of instructing students, the long-term effects of MT use, the actual use of MT by students, and comparing MT to other online tools before allowing or promoting the use of MT in the foreign language classroom (O'Neill 2016).

Using Google Translate as a supplementary aid for learning Malay was investigated in Malaysia in 2016. The aim of the researcher was to find out about beginning-level language learners' opinions on using Google Translate as a helping tool in language learning, if there was a relationship between the learners' use of Google Translate and their midterm grades, and what learners recognize as advantages and disadvantages of using Google Translate as a

learning aid. A questionnaire consisting of questions to be answered through a Likert scale and open questions was chosen to be the fitting research instrument. Regarding listening comprehension and speaking, Google translate was found not to be used by the participants. They, however, used Google Translate to acquire reading and writing skills. It turned out less likely to be used for learning grammar but more likely to be used for learning vocabulary. When looking for correlations between the use of the MT tool and midterm grades, the authors found that the two variables were closely connected. Students who regarded the use of Google Translate as a helpful tool also reached better grades. In general, the majority of students showed a positive mindset in terms of the helpfulness of Google Translate. The authors conclude that Google Translate should not be the primary means in learning Malay, yet highly recommend its use as a supplementary language learning tool and expect it to become relevant for speaking skills in the future as well (Bahri & Mahadi 2016).

Post-editing has not lost its status as an important topic in MT and language learning. In 2017 an article describing problems and challenges of post-editing in foreign language learning was published. The author points out that integrating post-editing into a language curriculum might cause controversy. MT and post-editing can help learners with a low proficiency level to improve their writing, but it most likely will not improve their skills. A widespread concern is that learners will overly rely on technological tools. The use of MT further promotes plagiarism and might prevent learners from acquiring translation skills. The author concludes that it is still unclear how to best handle MT and post-editing in language learning and mentions that teachers should be educated about MT and post-editing. Either way, according to Sun, this is a topic that will become even more important over time and will require continuing attention (Sun 2017).

Research specifically on the use of Google Translate has been conducted regarding several language pairs and in different geographical areas over time - the Middle East is no exception. A paper concerning learners of English in Saudi Arabia was published in 2017. The author intended to explore the opinions of university-level learners of English as a foreign language on the performance of Google Translate. 92 participants with Arabic as their L1 were asked to fill out a survey. The data revealed that almost all the students were consulting Google Translate frequently. Learners found it to be practicable in terms of learning vocabulary, writing, reading and translation tasks. The authors were surprised that learners used the MT tool more often for writing tasks than for translation tasks. Learners mostly felt that using Google Translate had a positive impact on their language learning and expressed the wish for instructions on its efficient use by the language instructors. The

students, however, also recognize that the MT tool is far from perfect because sometimes problems occur in terms of correctness. The authors recommend implementing clear rules regarding the use of MT in language classes (Alhaisoni & Alhaysony 2017).

Research regarding the comparison between statistical MT and NMT in the classroom was conducted in Ireland in 2018. In the article, the author describes an in-class evaluation exercise comparing statistical and neural MT in terms of adequacy, post-editing productivity, and errors (word order errors, mistranslations, omissions, and additions). The author points out that this was not a controlled experiment, but an exercise for students, without the aim to present a detailed comparison between SMT and NMT. Concerning the exercise, in order to save time, students were asked to copy parts of Wikipedia-texts on topics they were familiar with for translation. One part of the text was translated with statistical MT, the other with NMT. The students found that NMT works better than statistical MT, but problems regarding omissions and mistranslations occurred. Students in the authors' class overall developed a positive attitude towards working with NMT (Moorkens 2018).

Following the improvements of MT after the introduction of NMT it was found necessary to evaluate students' use of, opinions on and analysis of NMT tools. In 2018 Briggs published a study regarding Korean learners of English. The intention of his study was to give language teachers an overview of the students' use of and attitude towards Google Translate and Naver Translate. A special emphasis was on how much the learners rely on, trust and value the MT tools. To find out if the students have the ability to judge the tools in a reasonable way, the author compares their perceptions of MT output to experts' opinions on the same topic. The research data was collected via a survey and an assessment of MT output. The main findings of the study were that Korean university students used web-based MT very often, yet they did not use it without questioning its output, in fact in many cases, even if in some cases not at all, students were able to identify MT output errors almost as well as the experts could. Students agreed that MT cannot replace learning a foreign language. The author remarks that the lines between online MT and dictionaries are not totally clear any longer and MT tools offer a broader user-friendliness in terms of building whole sentences or parts of sentences: "This suggests that the lines between WBMT tools and EDs are becoming blurred and that it may be the ability of WBMT tools to produce and interpret longer phrases or sentences that is making them a more convenient choice for students." (Briggs 2018: 16) The author suggests that language learners should be taught about the reasonable use of web-based machine translation tools (Briggs 2018).

Ducar and Schocket (2018) offer an overview of the use of web-based MT,

specifically Google Translate, to give insights into strengths and weaknesses of MT and suggest pedagogical ways to integrate it into language teaching. They gained their insights through reviewing literature and did not specialise on a specific language pair. According to the authors, at the time Google Translate had improved a lot in terms of verb conjugation and putting out coherent sentences. Additionally, it did not make some mistakes that occurred in past versions, at least not frequently, for example unnatural writing, literal translation, not translating misspelt words, and mistranslating idioms that are less common. Problems that still occurred in NMT included grammatical inaccuracies, wrong choice of register and problems related to context, connotation, and denotation. The authors predicted that language teachers will be able to recognize the use of MT rather by realizing that texts are too well written considering the learners' language level than by mistakes made by MT tools. They point out the necessity of language instructors understanding how students use MT, and of teaching learners how to use MT in a sensible way. This would include the topics of ethical use of MT, keeping learners motivated to produce foreign language content on their own and teaching learners about the strengths and weaknesses of MT. Furthermore, the authors suggest including other tools including but not limited to online dictionaries or corpora into the curriculum. In the end, a conclusion that invites language instructors to work with, rather than against these technologies is drawn and the authors state that the task of a language teacher in terms of MT tools will be to "help learners understand that positive progress toward greater proficiency and ethical use of technologies are critical 21st-century skills" (Ducar & Schocket 2018:793).

In 2018 research about the use of Google Translate in writing essays in English as a foreign language was conducted in Indonesia, as well. A study examined students' use of Google Translate in essay writing and its role in language learning. The researchers used screen recordings and interviews with their participants as research instruments. The results show that in writing Google Translate was used mostly for looking up words, and less often for looking up phrases. It was used for looking up sentences and spelling even less often and very seldomly for grammar purposes. While the English learners used Google Translate as a supplementary tool for acquiring language skills, they did not overly rely on it (Chandra & Yuyun 2018).

In 2019 preliminary research was conducted regarding the use of MT output as a first draft for writing in English as a foreign language at different language proficiency levels and producing texts in different genres. The participants in the experiment were Chinese speakers at a Taiwanese university. The study was executed in five steps. First, the participants wrote a

text in Chinese, then they were asked to write a text on the same topic in English. After that, their original Chinese text was put into Google Translate. The next step for the students was to compare their English essay to the MT output. Afterwards, they uploaded the texts and filled out a questionnaire. The last step of the study was a computer-aided assessment of the texts. Analysing the data revealed that Google Translate produced texts with a higher proficiency than the students. Students were in general happy with the texts they produced with the help of Google Translate. The author concludes that further research is needed before deciding if and how to implement MT into foreign language writing and urges teachers to incorporate more interhuman exercises into language classes. In the end, the researcher highlights that technological evolution is continuously ongoing (Tsai 2019).

Up to this point, a big majority of studies focused on foreign language writing skills and trying to find out if machine translation is a helpful tool in the writing process. The bigger part of researchers is working with language learners at an intermediate level, mostly learners of English or Spanish as a second language. The most common web-based machine translation tool that is used in the studies is Google Translate. The opinions of students and teachers regarding MT are often inquired as well. It is also important to mention that the number of participants in most studies is relatively small. What occurs as an impression after reviewing the prior literature was ascertained by Lee. In her meta-study, she analysed 87 studies that were conducted between 2000 and 2019 and found that the number of publications in the field of MT and foreign language learning has gone up recently and the quality of MT has considerably improved over time. The bigger part of the researchers undertook their research projects with a mixed methods approach. Most of the research led to the conclusion that MT is useful, especially concerning written text production. It is still unsure if using MT directly leads to language learning and if there is a long-term effect on writing skills. The opinions of language learners on one hand vary, some find MT useful and want to keep using it, others don't like it so much, and learners who are beginners are sometimes confused by MT. Language teachers on the other hand are often still opposing the use of MT as a matter of principle. Among most of the scholars doing research on this topic, there is a consensus that there is a need to implement guidelines for MT into curricula and there is a further need for guidelines concerning MT and plagiarism (Lee 2021). This study is out of the timeline, but it was found to be the right place for it because the following research was not included in Lee's 2021 study.

In "Machine Translation and Global Research", Bowker and Buitrago Ciro point out that MT can be very helpful to scholars who are EAL learners (people who learn or speak

English as an additional language) if it is used appropriately, but not everyone knows how to use MT in a sensible way. Furthermore, MT has found its way into everyday life, hence there is a scholarly as well as a societal need for training in MT literacy, and the implementation of MT literacy can be seen as society's adjustment to this fact rather than something only necessary for people working with MT. They argue that translation-friendly writing plays a key role and present guidelines for producing MT-friendly text production. The authors find these more beneficial than post-editing guidelines because they cannot be used in the same universal way as writing instructions. After all, post-editing guidelines have to fit the languages, text types, topics and MT systems. Concerning the scholarly area there are clear benefits of using MT, for example, it makes global research more accessible for researchers who are not fluent in English and gives them the opportunity to contribute internationally as well. However, according to the authors, it is absolutely essential to remember that MT is far from perfect and cannot replace human translators, in fact, MT systems often rely on them in terms of examples the systems are based on. It is furthermore important to remember that confidentiality and usage rights should be considered when using MT tools. Heightened MT literacy could support informed decision-making about using MT. Apart from that the main aim of MT-literacy training is to provide participants with 1) an overview of all kinds of MT, respectively rule-based, corpus-based and neural MT, 2) the know-how to use MT properly, 3) the knowledge to be able to connect MT with related topics, 4) the ability to identify and produce translation-friendly texts, and 5) the know-how to bring forth MT-output of higher quality (Bowker & Buitrago Ciro 2019).

A long-term study on Spanish vocabulary development over one schoolyear was conducted by Fredholm in 2019. The study aimed to find out whether there was a long-term effect on the writing, to be more exact on the lexical diversity of students when they used MT, specifically Google Translate and to compare it to the writing of students who used hard cover dictionaries. A further aim was to find out what the long-term effects of using MT were compared to those of using hard-cover dictionaries, in case differences between both options would occur. To be able to measure effects, a pre-test and a post-test were held. Results after the post-test showed that lexical diversity decreased in both groups, the reason is unaccounted for. After evaluating and presenting the overall results of the study the author states: "Using GT may help foreign language pupils to produce texts, but it seems unlikely that it can teach them how to produce texts without it […]" (Fredholm 2019: 14). The author concludes that there is a positive effect of Google Translate, as long as students use it, however, there is no long-term effect on their writing. For a complete picture, the author adds that the use of hard-

cover dictionaries does not have a long-term effect on the lexical diversity in students' writing, either. It is recommended that students receive training for MT, as well as for classic dictionaries (Fredholm 2019).

In 2019 O'Neill aimed at measuring the impact of online MT engines and online dictionaries on foreign language writing. He directly compared the work of students using online MT to the work of students using online dictionaries. What the author wanted to find out as well was if prior training with these tools would make a difference in the texts and if there was a lasting effect. The researcher separated the 310 participants, American students of Spanish and French, into five groups: one group who would not use any tools, two groups using MT, one of them being instructed first, the other one not, and two groups using online dictionaries, again one of them being instructed first, the other one not. All participants were asked to take a pre-test. A group-specific training session followed one week later. Then the experimental writing exercises were executed and were followed by a post-test one week later. Finally, to measure long-term effects, a delayed post-test took place one month later. Results showed that altogether the group of participants who used MT while being instructed first performed best. The author suggests the implementation of MT into language learning curricula, for students will use it one way or the other. A second option he recommends is the use of online dictionaries in language learning - participants of the study who were in the group using them after being instructed still had much better results than the group without any aiding tools. Instructors might prefer this option because the ethical questions intertwined with the use of MT are not a concern in that case. Finally, the author invites instructors to face up to using MT in class and to empower language learners to make informed decisions in terms of employing MT tools for their tasks (O'Neill 2019).

Indonesian students' opinions regarding the use of Google Translate were investigated in 2019. Murtisari et al. investigated students' beliefs, feelings and practices using MT. A questionnaire was conducted with 200 students participating. Analysing the data led to prior findings being confirmed, to be more exact, they also found that students mostly used MT tools as dictionaries for single words. However, there was also a group of up to 30% who reported using MT tools for sentences, paragraphs, or bigger writing parts. The bigger part of participants found that using MT for their writing could be considered unethical depending on the way of using it. The majority, nevertheless, find MT beneficial for language learning. The researchers conclude that even though students' vocabulary range has become broader, they are concerned that students may evade the foreign language when overly using MT. They suggest talking about MT more openly and more frequently (Murtisari et al. 2019).

Implementing Google Translate in teaching Finnish and Hungarian was the topic of a 2019 article by Tarsoly and Valijärvi. The aim of their research was to find out which experiences students had with using Google Translate as a learning tool, possible ways of using it for teaching morphologically complex languages and what kind of assignments would be supportive regarding coping with mistakes in the MT output. The practical part of the research consisted of a survey and an in-class exercise. It was found that students of all language levels were already using Google Translate, even though they knew about its weaknesses. Students could profit from the experimental tasks, for example in terms of self-consciousness because they saw that their texts were of a higher quality than the ones Google Translate produced. Working with MT tools could also promote critical thinking among students who know the language well enough to identify mistakes made by the tool. A complete overview of the task types and how well the incorporation of MT tools into them works can be found in Figure 3:

Exercise type		Post-beginner	Intermediate	Advanced
Analytical Tasks	Dictionary-like exercise	+/-	+	+
	Part-of-word identification	+/-	-	N/A
Discovery Method	Elicitation	-	-	-
	Problem solving	-	-	-
Awareness Raising	Error correction	+/-	+/-	+
	Text-level error analysis	N/A	+/-	+/-
	Guided essay writing in TL	+	+	+

Figure 3: Usefulness of MT tools for task types by Tarsoly & Valijärvi (2019:72)

The remaining question is how to implement MT into language learning in a sensible way. The researchers recommend Google Translate only for certain task types. They conclude by agreeing that MT is evolving quickly but that there is room for improvement regarding Finnish and Hungarian (Valijärvi & Tarsoly 2019).

A research team in Hong Kong changed the research direction a bit and in 2019 explored how accurate teachers' impressions of texts written by Google Translate were. They explored how teachers graded texts written directly into English compared to machine-translated texts, how they would react to learning that they graded MT output if they found Google Translate is a pedagogical tool, and what noticeable irregularities were found in the

MT output. To answer these questions, the yet-unaware teachers were asked to correct the texts and later participated in an interview. Upon the revelation that some texts were translated by Google Translate a part of the teachers were surprised while others had already suspected it. All language teachers agreed that Google Translate is not cut out to be used by students to translate parts of their tasks. Irregularities between students' writing and Google Translate texts that were striking to them concerned differences in the language level of the students and the MT tool. The authors can confirm the findings of other studies and conclude that it is necessary to implement MT into the language learning curriculum since students use it regularly and the technology will not disappear into thin air (Stapleton & Leung 2019).

A study about already established different ways to implement translation technology into language learning was conducted by Yamada (2019). Focussing on language learners, L2, and EFL learners, his aim was to review these different ways to explicitly show how translation tools can be implemented into language learning and what their advantages and disadvantages are. Another aspect in his work that will not be largely considered in this thesis is increasing the proficiency of lay translators through NMT tools. In general Yamada supports the view, that translation has become a basic skill and therefore, translation tools are now used by a broad majority. He states that MT and Translation Memories (TM) can be used as tools in learning a foreign language. They are used as tools similar to computer-assisted language learning tools or to improve translation skills. The author describes different ways of using MT output. On the one hand, it can be used as a bad model, in other words for error correction. He describes it as helpful to language learners but raises awareness that there is a discussion whether positive examples have more influence on language learning than negative examples do. On the other hand, Yamada describes using TM as a good model, in other words presenting positive examples of language use, as helpful as well. However, he points out that TM presents text portions without connection to a whole text, which means a larger context is missing. The author then raises awareness that using MT as a bad model might not work as well as it used to, due to the shift from MT to NMT. NMT produces output that has an increased quality that, at least for the language pair English and Japanese, might surpass the language level of learners. He recommends reflecting properly before using it with lower-level, but also higher-level language learners. He states that, however, language learning could profit from NMT and calls for more research in this area. (Yamada 2019)

After co-introducing the term machine translation literacy in 2019, Bowker conducted research about Chinese speakers' use of MT in a scholarly context, focusing on scholars who

have to use English as an additional language (EAL) for their writing. After reviewing the relevant literature, she states:

> Just because MT is easily accessible, easy to use, and produces a quality of output that has improved in recent years and may be reasonable for some purposes, this does not mean that people instinctively know how to optimize MT or even how to use it wisely in a given context. (Bowker 2020: 293)

Subsequently, she adds that there is a need for MT-literacy and therefore the designing and conducting of MT-literacy workshops has begun. She reports on a pilot workshop with Chinese students in Canada, which included the topics of privacy/confidentiality, academic integrity, potential for algorithmic bias, awareness of different tools, awareness of different translation tasks, and improving the output by changing the output as subtopics. While the workshop left behind a good impression, students implied being interested in more individualized instructions and working techniques in terms of language specificity. (Bowker 2020).

Research has also been conducted concerning MT and independent language learning because MT is available and featured on most electronic devices, especially those connected to the internet. To be more precise, Ana Niño aimed to find out how language students use MT as an independent language learning resource and what their opinions about MT output are. She designed various language exercises, which the learners did at home with a free choice of learning aids. Afterwards, the project was reviewed by the group. It was found that MT is most likely helpful for tasks that include written comprehension and vocabulary in context, as well as for counterchecking small tasks. The author points out that text-to-text translation is already working well, referring to Google Translate, whereas speech-to-speech translation is rather underdeveloped, but Niño expects it to improve in the coming years. Due to a well-planned learning experience, the students participating in the study learned about the positive and negative sides of MT, which should help them to make an educated decision on how to best use it. In terms of the bigger picture, it can help them as well in their everyday life and their professional future, whenever they come across situations that require the use of MT. The author concludes that it would be reasonable to implement MT into language education curricula (Niño 2020).

The role of MT as a tool in computer-assisted language learning was investigated by Lee in 2020. The aim of her study was to find out how MT influences the students' texts and how it influences their revision of the texts. To find answers, a five-step experiment was conducted. First, the participants were shown a short video about the topic of the exercise, and then they created a text about the topic in their L1, Korean. Then they had to create a manual translation into English. In the next step, their original texts were translated with MT. Finally, they were asked to revise their manual translation with the MT output. Analysing the data showed that using MT improved vocabulary, grammar, and expression. Students' writing activity also improved during the revision stage. Awareness about the strengths and weaknesses of MT was raised as well. For a successful implementation of MT into the language learning curriculum, instructors need to be aware of the role of MT in language learning and guide learners by providing information and rules regarding the use of MT (Lee 2020).

To successfully make use of MT, it seems to be important to have gained a certain proficiency level in the target language. Chung investigated the effect language proficiency has on post-editing MT output. 59 participants who were Korean learners of English as a foreign language were asked to do a cloze test and a writing test, so their language proficiency level could be correlated to three different proficiency groups. They were then asked to post-edit a machine-translated text that was a combined version of the MT output of two different MT tools, to the end that MT errors were maximised for the exercise. Results showed that language proficiency level and detection of errors are closely intertwined. Most corrections happened on the word level. Learners with a high proficiency level were more likely to do corrections on the sentence level, respectively, they re-translated the sentences. The majority of this group translated the whole text before handing in the final post-edited version of the MT output. Learners of the intermediate and low proficiency groups did not do that and rather corrected the MT output directly. In a nutshell, the higher the language proficiency level was, the more successful was the revision of the MT output. The author states that these findings support former recommendations by other researchers to implement MT into language learning (Chung 2020).

At the end of 2020 a paper expressing that in the 21st century, it is necessary to be able to understand how the technology that gives us access to information works was published. The authors state that it is just as important to know how to use this technology properly to be able to profit from the possibilities neural machine translation offers for writing in a foreign language - a competence that they refer to as "technology literacy" (Chon, Shin & Kim 2020).

They state that NMT cannot take the place of a human translator but can provide help to learners in three different ways: it can be used as a dictionary, enhancing productivity, as an information database in terms of patterns concerning grammar and lexical issues, and as a tool for independent self-correction or confirmation of the correctness of the learners' text. The main aim of their study was to find out if there was a difference in ratings between texts written in three different modes: directly in the foreign language, texts translated by the learners themselves, and text translated by MT, specifically Google Translate. The authors conducted an experiment with 70 participants, all high-intermediate learners of English as their second language and Korean as their first language. Participants were instructed to complete writing tasks in all three modes. The texts were then analysed on various levels. Linguistic characteristics were analysed with a computer program, while accuracy was checked manually via error analysis. Overall, the authors did not find significant differences between the results of the three different modes of the writing task, in other words, the texts were of a similar quality in each writing mode; the kinds of mistakes, however, varied. The most common mistakes made in general related to articles, word choice, mechanics, prepositions, sentence structure and verb tense. An overview of how the mistakes varied can be found in Figure 4.

	Direct Writing		Translated Writing		Machine-translated writing		F	Post-hoc
	M	SD	M	SD	M	SD		
Articles	1.21	1.27	1.93	1.57	0.99	1.04	9.542***	1<2* 1=3 2>3***
Mechanics	1.02	1.44	1.18	1.22	0.76	0.98	3.041	N/A
Mistranslations	0.02	0.11	0.16	0.37	0.17	0.44	4.808*	1<2* 1<3* 2=3
Noun Endings	0.13	0.35	0.23	0.44	0.24	0.42	1.991	N/A
Prepositions	0.99	1.24	1.14	0.97	0.62	0.67	6.440**	1=2 1=3 2>3***
Pronouns	0.18	0.35	0.25	0.56	0.22	0.42	.414	N/A
Sentence Structures	0.51	0.66	1.00	1.01	0.67	0.98	7.733**	1<2** 1=3 2=3
Subject-verb Agreements	0.05	0.18	0.09	0.25	0.16	0.47	2.174	N/A
Word choice	1.00	0.89	1.24	1.22	1.57	1.28	4.523*	1=2 1<3* 2=3
Word Form	0.18	0.36	0.36	0.59	0.23	0.40	2.656	N/A
Verb Form	0.32	0.42	0.48	0.77	0.29	0.43	2.351	N/A
Verb Tense	0.59	0.87	0.74	1.25	0.54	0.78	.835	N/A

Note: p<.05*, p<.01**, p<.001***; 1=Direct Writing, 2=Translated Writing, 3=Machine-translated Writing.

Figure 4: Error Variations by Chon, Shin & Kim (2020:8)

These results also mean that the quality of Google Translate has gone up and it can help learners with some aspects of text writing, according to the authors, for example, the learners' word choices, but also the opportunity to focus on the content while leaving grammar issues to be resolved by the MT tools, as in this case Google Translate. (Chon, Shin & Kim 2020).

By considering the effects of MT on specified linguistic features when used at different language proficiency levels and for different text genres, Chung and Ahn made their research relatively complex and, thus, added more depth to MT and foreign language writing. They analysed the effects that using MT has regarding syntactic complexity, accuracy, lexical complexity, and fluency (CALF). To determine their proficiency level, a total of 91 participants were asked to first of all do a cloze test and a writing test without any aid at all. They were then separated into two groups according to their level. 61 of them had to write a

narrative text, first without any help and then with the help of Google Translate. The other 30 learners had to write an argumentative text. After the second writing task, there was a survey concerning experiences with and opinions about MT. When analysing and comparing the texts of their participants, Chung and Ahn found that in terms of accuracy using MT was beneficial for both proficiency levels, but it remained unclear whether it was beneficial in terms of syntactic and lexical complexity. MT can help beginners build sentences but lowers syntactic complexity in the texts of intermediate and advanced learners. In general, lexical variation was enhanced but sophistication abated. Concerning the different text genres, the overall results improved for both, even though there were problems in some categories. To put the findings in a nutshell, MT is more helpful to beginners than to intermediate and advanced learners and most useful for checking and improving accuracy. Texts partly lose sophistication when MT is used but fluency improves. The researchers advise that language learners should be instructed to use machine translation according to level and text genre (Chung & Ahn 2021).

Kelly and Hou focused on learners of EAL. The main aim of their study was to find out, in the context of "translanguaging", how EAL learners use MT in their day-to-day life during different stages of their language proficiency level and how teachers use MT to interact with the learners during their language acquiring processes. "Translaguaging" is, roughly said, a bilinguals' accessing their languages and language knowledge to learn and communicate. In order to answer the research question, qualitative data from a larger study about language learning was taken into consideration. Data analyses showed that there are three phases of using MT. When learners are beginners, they use MT "as a survival tool" in communicating with teachers and other students. As the learners are progressing to an intermediate language level, their use of MT decreases and they become more critical about it because they know the language better and recognize the mistakes MT makes. MT is either not used or only used for very specific purposes, for example having to handle specialist vocabulary, as the learners reach an advanced level. Teachers use MT for interaction with beginners, then gradually try to stop implementing MT into their communication. The authors suggest that teachers and students, together, should develop rules for the sensible and responsible use of MT for all stages of language learning (Kelly & Hou 2021).

Another contribution to the topic of machine translation and language learning focusing on Arab-speaking learners was published by Omar. Her research focuses specifically on learning vocabulary with the help of MT. She wanted to find out whether MT is a good strategy for acquiring vocabulary, if MT has already replaced dictionaries in this context,

what the problems are when learning vocabulary with the help of MT and what alternative options language teachers could integrate into their teaching instead of technological tools. In the search for answers, participants of the empirical experiment were asked to take part in a vocabulary quiz, and to find the correct answers with the help of MT. Analysing the data showed that MT is not a helpful tool in terms of using context-appropriate vocabulary, hence MT cannot replace dictionaries in that matter. Additionally, the author finds that learners could suffer disadvantages if they use MT as their only tool for acquiring vocabulary. Finally, the author presents recommendations for language instructors and learners regarding learning vocabulary in context. Instead of using MT, the use of online dictionaries in combination with critical thinking and a means of putting the vocabulary into context is recommended, as well as the implementation of a holistic presentation of MT, including its drawbacks, into the curriculum. Learner awareness regarding the contextualisation dependency of vocabulary should be encouraged. The author states that further research on the use of MT is needed regarding language learning activities other than vocabulary acquisition (Omar 2021).

In 2021 the use of DeepL as a foreign language learning tool, specifically in French as a second language at the university level was investigated. The authors held a class regarding digital learning and focused on introducing the participants to DeepL by exploring the NMT tool. The authors find it important to include MT into the language learning curriculum, hence they created a course for DeepL-aided written text production. The participants had to complete different exercises: the first of them was intended to give them an overview of existing MT tools in terms of history, functioning, how they are different from tools other than MT, for example, online dictionaries, and how NMT is different from earlier MT technologies. The second exercise was an autocorrecting task that should show the participants their abilities and inabilities in terms of linguistic and cultural issues. The third exercise was a post-editing task that introduced the participants to the features that are integrated into DeepL for this purpose. The fourth and last exercise was the post-editing of a culture-specific text. In this exercise the participants learned that MT has its limits and they had to use their cultural and language knowledge, in other words, they learned that it is still necessary to learn a language because MT alone does not necessarily produce output that has a high language proficiency level. The exercise also included a final group discussion. In this last stage, the language instructors play a highly important role, as it is their task to guide the participants towards a conclusion that leads to a sensible use of MT tools. The authors conclude that nowadays it is important to include MT in language learning and that is a justified step as earlier studies have not found any MT-induced impairment in students'

writing performance (Barysevich & Costaris 2021).

A study by Wang and Ke that was published in January 2022 concentrated on intermediate learners of English as a foreign language in mainland China. The main aim of the study was to assess whether MT is an appropriate tool for computer-assisted language learning, and it investigated during one semester how learners used MT for writing tasks if machine translation improved their writing competence and how they reacted to the implementation of machine translation into their writing instructions. The authors prepared writing tasks as well as a questionnaire and separated their participants into two groups, an experimental group, and a control group. The experimental group wrote an essay in Chinese, translated it manually into English, then translated their original texts into English with MT, used the MT output to revise their manual translations, and then created a final draft that was again revised using the MT output before being handed in. The control group, without the help of any electronic devices, wrote an essay in English and revised it once before handing it in. After analysing the participants' texts and the survey the authors found MT to be an "effective teaching aid" and language learners showed positive reactions to the implementation of MT into their writing task. Wang and Ke suggest that language teachers should provide guidance on the use of machine translation to the language learners (Wang & Ke 2022).

The same year, a literature review on MT in teaching and learning was published. Jolley and Maimone (2022) assembled and analysed research of the preceding thirty years. They present a chronologically and topically assorted review. The researchers aimed to find out how foreign language learners use MT, what learners and instructors think about MT tools, what effect using MT tools has on language learning and how instructors should react to the learners' use of MT. The team found out that learners use MT to look up words and phrases in a common manner. Although their research material was inconclusive, they found that metalinguistic knowledge and writing task performance in the foreign language might benefit from the learners' use of MT. Regarding the reaction of instructors to the use of MT, the authors found that the undue use of MT is considered cheating, which leads to a majority of instructors recommending forbidding and prohibiting the use of MT. The researchers, however, found that the use of MT is inevitable and might be beneficial. They recommend using MT for pedagogical purposes. Jolley and Maimone recommend that future research should focus closely on the learners' skill background and provide more information on the learner, as well as material and tools for data collection and categorising, simply put, to go more into detail about the research process. Furthermore, they recommend researching the

connection between teaching methods and the cognitive process of learning a language, especially regarding which methods facilitate learning - in order to implement MT in a way that helps learners in the processes. (Jolley & Maimone 2022)

Another literature review was published in the same year by Deng and Yu. In their research, they focused on language learning with the support of MT. To be more specific, they reviewed and analysed 26 articles to find out who are the main users of MT, which are the most commonly used theoretical frameworks in researching MT-assisted language learning, what are MT users thinking about the tools at hand, and how MT tools are used in language learning and teaching. They found that undergraduate and graduate students are the topic of interest in most of the research. In terms of theoretical frameworks, they were able to conclude that less than half of the studies were using them at all. The theoretical frameworks used "were the taxonomy of error types, CALF measures, translanguaging, the ecological theoretical framework, the technology acceptance model, the TPACK (technological, pedagogical, and content knowledge) framework, and the ADAPT (amending, discussing, assessing, practising, and training) approach" (Deng & Yu 2022). The research on users' attitudes towards MT focused mainly on students and hardly on teachers. Both groups mainly showed positive attitudes towards MT but sometimes were challenged by it. The topic of this thesis is teachers' attitudes, which is why the findings of the study by Deng & Yu regarding teachers will be taken into consideration more broadly than the students' views. The authors found that teachers have a high opinion of MT tools when they have experienced making it part of the syllabus. MT tools also give them the option to communicate with language learners speaking a language the teachers do not. Teachers see MT tools as communication aids for learners. The researchers also found that teachers were not concerned about losing their jobs due to MT tools, which is a question that was also posed to the participants of the experiment detailed in this thesis. However, not all teachers were convinced of the positive aspects of MT. Some found it might have a negative impact on language learning due to learners possibly overusing MT tools. Some were also concerned because of their own hardly existing expertise on MT tools and others found the circumstances unsuitable. Regarding the integration of MT into teaching and learning languages Deng & Yu. in general extracted that there was a system behind the introduction of MT into the learning process. Researchers mainly proceed by introducing the topic, demonstrating the tools, giving the students tasks and having them reflect on their experiences (Figure 5).

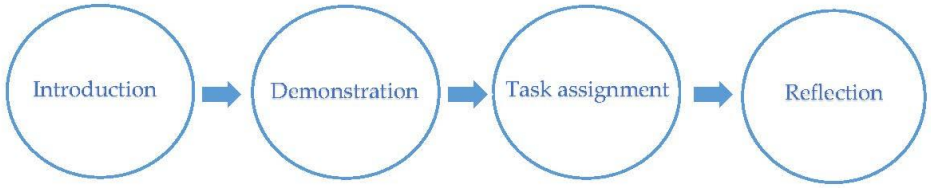

Figure 5: Incorporation Flow by Deng & Yu (2022: 8)

The researchers conclude: “The findings showed that the main MT users were undergraduate and graduate students. Teachers and students held mixed attitudes for varied reasons. It was also found that MT integration followed four steps, i.e., introduction, demonstration, task assignment, and reflection.” (Deng & Yu. 2022).

A study trying to find out how well language teachers did in recognizing MT tool-aided texts was conducted in 2023. A two-phase experiment was conducted to find out if the results would resemble the findings of earlier studies. The participants in this experiment were college language teachers for Spanish and intermediate-level students in the USA. Teachers were speakers of varying L1s: Spanish, English, Farsi and Russian, there were also three heritage Spanish speakers. Language learners all spoke English as their L1, except for one heritage Spanish speaker. In the first phase, students were pre-tested and then asked to write two different texts. They then were separated into two groups, one using MT tools and the other not using them. Both groups had a five-minute window for revising their texts in the end. In the second phase language teachers, who were priorly interviewed to get a full picture of their background, had to categorize these texts as MT-aided writing and writing without MT tools and explain their choice by selecting prepared categories of signs that led them to their assumption but could also comment on other signs. The correctness of the categorizing was taken into consideration. The authors found an overall accuracy level of 73%, taking into consideration the correctness of ratings of the aided texts as well as the unaided texts. According to the authors, these findings are similar to findings of earlier studies. Teaching experience did not correlate with accuracy levels, the text types also did not influence accuracy levels. The authors suspect that: “Rather than focusing on instructor experience, it is more likely that technological literacy, MT training, and specific patterns of instructor technology use have an impact on the instructors' ability to differentiate writing samples generated with or without MT assistance — An assumption to be verified by future research.” (Maimone & Jolley 2023:639). The authors conclude that it is necessary for language teachers to be able to recognize MT-aided writing to keep track of the students’ improvement over

time while also recognizing that there is room for mistakes in their judgment. The researchers recommend integrating teaching language learners about MT tools into language classes. (Maimone & Jolley 2023).

Observations that can be made in this chapter are the following: Firstly, we can see a change in exercises over time. Before the introduction of NMT tools around the year 2016 it can be observed that MT output was used as a bad language model in exercises. Learners were asked to pre-edit their writing or post-edit MT output to understand grammatical differences between languages. Once NMT was implemented and accessible, a change in exercises started. While post-editing MT output stayed suitable, using NMT output to correct one's writing became a trend. Secondly, opinions changed. Learners as well as teachers recognized the improved quality of NMT output. While learners find it more helpful than they used to, teachers find it more helpful as well, however, concerns about academic dishonesty and dishonesty in text writing in general arose. So did concerns about the negative impact NMT tools might have on the performance of learners when these tools are not available. Making learners aware of what the limitations of these tools still are, adapting exercises and in-class activities and introducing NMT to teachers have become widely-suggested solutions to these concerns. Thirdly and lastly, the research focus has shifted over the years. In the beginning, we can follow the search for adequate exercises to present MT tools to language learners, mostly in the context of university-level education in the beginning and later also in a broader context of school education. After the introduction of NMT, we can see the first bigger shift. Opinions and experiences of learners and teachers become a broader topic of interest. The last bigger shift that can be followed through the literature review is a change of thinking. The question is no longer is MT good or bad, nor what people think about it, but how can NMT be sensibly implemented in general language education? The reason for that might be that today NMT is everywhere and is widely used on a regular basis. It cannot and should not be ignored which is why this is a positive development. While there is no clear border between research topics, new trends are visible.

In the next chapter, the focus lies on research and developments in and around the German-speaking and -learning language area.

2.2 Machine Translation and language learning in the German-speaking and -learning area

Research on machine translation and foreign language learning in the German language context has hardly been conducted, unfortunately. There are, however, some scholars who focused on this topic over time. An overview of their work can be found subsequently.

Steding (2009) describes MT as a problematic tool because learners put too much trust into the results it delivers. He states that the undisclosed use of MT results in problems concerning plagiarism. Thus, the function of a language teacher includes detecting the students who use MT for their assignments, reacting in a way that doesn't strain the relationship with the learner and preventing the learners from using it. In the article, among other things, a point highly relevant to this thesis is made: to be able to recognize mistakes that result from using MT, teachers must have a certain knowledge and understanding concerning MT and it is also necessary to include a "demonstration of what MT can do" in the lesson plan. Steding concludes that MT will remain a problem in the language classroom and that it is of primary importance to restrain students from using it (Steding 2009).

Broader research about the general use of online resources, including MT, among university learners of German as a foreign language (GFL) was conducted a few years after that. Larson-Guenette wanted to find out how frequently and why online resources were used, as well as what the beliefs about online resources and language learning were. After analysing data from a survey and several face-to-face interviews she found that the participants were using online resources all the time, 43% of them on a daily basis and 26% weekly. The remaining 31% used it less often, not at all, or did not answer. The reasons given for using online resources concerned time management, vocabulary, and accuracy. Some of the learners found that online resources were helpful in the learning process, while others were unsure or thought they were not. The focus of Larson-Guenette's study is different from the focus of this thesis and her sample was not heterogenous because all learners were university members, however, the findings are considered relevant because they depict that the use of online resources, one of which is MT, is very common and the author suggests to do further and more specific research on online resources (such as online dictionaries, online translators, or mobile applications) and how they are employed by learners and also instructors (Larson-Guenette 2013). Exploring the teachers' use of MT tools is a part of this thesis as well.

White and Heidrich's academic interests were of a more specific nature. Their 2013

study intended to find out what students' strategies and beliefs were concerning web-based machine translation (WBMT). The authors employed Google Translate in their research. 18 intermediate-level learners of German from one class, in which WBMT was prohibited, participated in the study. The researchers prepared a survey to get an overview of the participants' backgrounds and their opinions on WBMT, a source language writing task, and a questionnaire to find out how they felt about using WBMT for translating the writing task. After producing a text in the source language, the participants were informed that their work would be translated with WBMT, and they had the chance to adjust their texts for this purpose. After the translation, they also had the option of post-editing the output. The analysis of the experiment led to valuable findings. Some participants were insecure about the proper use of WBMT, which might be a result of insufficient guidance. The participants' final texts still had some mistakes, hence, their strategies with WBMT were not sufficient. The authors find this is most likely caused by insufficient training as well. The study furthermore revealed that the participants used WBMT for some of their regular assignments even though it was prohibited. Their beliefs and strategies regarding WBMT seemed to correspond, learners who had negative prior experiences with WBMT were more sceptical about the output and learners who had positive prior experiences showed more trust in the WBMT output. Concerning their feelings about using WBMT for their task in the experiment, participants found that Google Translate can be used to produce an accurately written text, but the personal style is missing. The researchers concluded that there need to be guidelines for using MT because students will employ it regardless of prohibitions and MT is not very likely to disappear from the technological landscape (White & Heidrich 2013). As they put it:

> We could use any number of metaphors to describe the case of WBMT, such as "the genie is out of the bottle" or "you can't unring a bell." The tools are here and students are using them; the imperative for language educators is not only to guide students toward effective and productive use of WBMT but also to explore and exploit WBMT's potential as a learning tool. (White & Heidrich 2013: 243)

In 2019 a study on using online tools when writing in German as a foreign language was conducted. Knospe et al. (2019) observed the use of online resources by Swedish students who learned German as their third language. The researchers focused on how extensive online resources were used, at what point during the writing process they were used, what the

learners used it for, and what strategies the learners applied when they used online tools. The main findings of their study were that the writing time and the time spent on using online resources do not correlate. Also, the use of online resources is very individual and happens throughout the writing task. The top resources among the Swedish students who were participating in the study were Google Translate, Pauker, Babla and Tyda. How students used the online tools was different - some used them pointedly, Knospe et al. call that "controlling the sources". Other students were not that purposeful and used the tools haphazardly. They counted on quantity rather than quality. The researcher called that "controlled by the sources". They gained their insights by recording the students' writing process and analysing the screen recording with them, talking to them about their experience and reviewing the texts together. It is important to mention that the student sample was rather small, and the findings cannot be considered universally true, which is the case in many of the studies around MT tools. However, the researchers took the topic and put it into a contemporary frame by implementing online tools into their research (Knospe et al. 2019)

In 2021 Perrin et al. published a four-page article in a Swiss journal, reporting on convictions of young foreign language learners regarding the usefulness of DeepL and Leo for their vocabulary training. The authors gave three assignments to the participants, all including writing texts with and without the help of DeepL and Leo. Afterwards, participants took part in an interview about these assignments and their overall experience with and views about the tools used in the study. The researchers found out, that two-thirds of the 15 learners in their experiment find these tools useful, however, several think that there need to be certain preconditions for using these tools. They wish for them to be allowed only in class and only for certain activities. Furthermore, for the effectiveness of their learning, they need complementary tools like manually written vocabulary lists and they learn best through repetition. The authors conclude that more research should be conducted in terms of the connection between language levels and preferred translation tools, the effect tool-specific features have on language learning and implementing a concept and learning material for the effective use of translation tools in language learning. (Perrin et al. 2021)

Developments of research topics similar to the ones which were described in the previous chapter can be found here as well, however, the amount of research conducted is comparatively small. The findings remain equally important.

To conclude, taking all former studies (international and in the German language realm) into consideration, it is clear that machine translation in foreign language learning is a topic that has been of interest for many years and is to this day highly relevant. To be more

specific, it is a topic that has its finger on the pulse of time and might stay relevant for many years and decades to come because the technological evolution is ongoing and translation tools, also including generative AI, develop ceaselessly. making researching this topic as current as ever. During the literature review, many questions came up; some of them shall be researched in this thesis – the research questions will be presented in the next chapter.

3. Research questions and methodology

3.1 Research questions

In this chapter the research questions of the thesis are presented, followed by a presentation of the way all data will be collected and analysed and reasoning for these choices are offered.

Former research, as can be drawn from the previous chapters, was often focused on ways to implement MT tools into language teaching, if and how they help learners improve their language skills, and learners' attitudes towards MT tools. One of the things that was not researched as often as others was the language teachers' attitudes towards MT tools. In the German language area, relatively little research about MT and language learning has been conducted, and during the research for this thesis, it was not possible to find any data gathered specifically for and in Austria. Due to the fact that there is a lack of research concerning Austrian foreign language teachers' attitudes towards NMT tools this project's research questions are:

1. What are current attitudes towards NMT tools among foreign language teachers in Austria?
2. Do foreign language teachers in Austria treat this topic in class and, if yes, how?
3. Do foreign language teachers in Austria use NMT tools privately and, if yes, what for?

Answering these three questions will contribute to shining more light on the current mood concerning NMT tools and their utilisation among foreign language teachers in Austria. Answering these questions creates added value for translation studies as it will show how people who train learners that might become translators one day are treating this topic in class and privately, hence, the general dealing with specific translation tools might be partly unveiled. Furthermore, they give an insight into how and why NMT tools are used apart from a professional translation context, an insight that could possibly be a first step in helping in the further development of target audiences other than translation professionals and promoting the commercialisation of NMT tools in areas off the beaten track, such as the creation of further commercial language learning tools that are based on NMT tools (like Duolingo for example), as was also already implied by Wang, Zhang, and Liping (2022).

3.2 Survey

To answer the earlier proposed research questions, a quantitative survey with a total of 34 participants was conducted first, as well as qualitative interviews with 5 partners, which will be described in 3.2 Interviews. The survey questions in this thesis built on previous work by Niño – especially the 2009 study *"Machine Translation in foreign language learning: Language Learners' and Tutors' perceptions of its advantages and Disadvantages"*. This was deemed especially useful, as the purpose of this thesis is to display the general opinion on machine translation tools in language learning and in the everyday life of language teachers in Austria. Niño (2009) surveyed 30 university-level foreign language teachers with a similar purpose as a part of her study, which is why it has been adapted in this thesis. Some of the questions had to be updated and changed for reasons of contemporariness and language specificities. Furthermore, the survey was conducted in German with the intention of being accessible to all language teachers in Austria. Niño's 2009 survey and the questions used in this thesis can be found in the appendix.

Subsequently, differences between Niño's survey and the adapted version (which are listed in the appendix) used in this thesis will be established and explained:

Question 1 (Sind Sie Sprachlehrer*in in Österreich? Ja/Nein.) was added to filter out the group of people relevant to the research focus of this study. Questions 2 to 7 were added to the original survey to get a gist of the participants' background in learning languages themselves and teaching. Question 8 (Ist Ihnen neuronale maschinelle Translation (NMT) ein Begriff? Ja/Nein.) was updated to the newer machine translation tools. In other words, the neural was added. Questions 9 to 27 were taken from the original survey and partly adapted to meet contemporary and newer standards. Especially the options in question 10 (Welche dieser Tools haben Sie schon verwendet? DeepL/Google Translate/Microsoft Translate/Andere) had to be changed to today's known NMT tools. The options in question 13 (Wofür benutzen sie diese Tools? (Mehrfachaufzählung möglich) um fremdsprachige Texte zu lesen/um mit Sprecher*innen anderer Sprachen kommunizieren zu können/ als Basis zum Schreiben fremdsprachiger Texte /um herauszufinden, wie gut sie funktionieren/aus anderen Gründen) have also been adapted, because the intention of this question in the thesis is to establish how teachers themselves use NMT in private, hence, due to the shift in interest the answers had to be changed. In questions 18 and 24, L1 was changed to classroom language and L2 to foreign

language because it is more accurate and easier to understand for people who might not be familiar with the meaning of L1 and L2 in the translation community. The exercises and skills in questions 19, 20, 26, and 27 were adapted to categories used in the Austrian educational system. Questions 30 and 31 were added to get a gist of teachers' feelings regarding NMT as a part of education. This seemed to be interesting regarding Bowker and Buitrago Ciro (2019), who call for higher machine translation literacy in higher education. Question 32 (Muss der Sprachunterricht in der aktuellen Form geändert werden, um Lernende auf die Praxis vorzubereiten?) has the purpose of finding out whether or not teachers see a need to change language teaching to meet nowadays' standards of technology, meaning the common use of NMT tools and AI.

The online survey was active in a very short timeframe, between 6.10.2023 and 14.10.2023. It was published on different Facebook groups that were fitting for the topic and on my own page as well as on Instagram both on my page and in my story and as well on WhatsApp in my story.

3.3 Analysing the online survey

The online survey was processed through the platform empirio.de. The platform also provides statistical analysis and graphics that are ready for interpretation. All figures in 4.2 were provided by empirio.de. The interpretation of the analysis will follow in Chapter 5.2.

3.4 Interviews

The interview questions are based on the remaining questions of Niño's 2009 (both available in the appendix, 9.1 and 9.2). For the qualitative live interviews, five partners could be found. The interviews were recorded on a phone and later transcribed with the aid of Microsoft Word's dictation tool Office dictate. Again, some questions were added, some were adapted, and others were translated directly. Questions 1 to 3 were added to gain insight into the teachers' professional background. Question 4 (Welche Rolle spielen Tools für NMT in deinem Unterricht? Dürfen sie verwendet werden? Sind sie verboten? Sind sie ein Thema, das im Unterricht besprochen wird?) was merged from questions in the original survey and adapted to fit the purpose of this thesis. Question 5 (Könnten deiner Meinung nach Tools für

NMT im Unterricht auf eine sinnvolle Weise eingebracht werden?) was slightly adapted, the phrase "in a sensible way" was added to further define the question. Questions 8 to 12 were added to find out about the participants' private use of NMT and their opinions on it. Question 13 is similar to Question 32 in the online survey, however, here teachers are asked how language teaching will have to be changed if they think it has to be changed. In order to include the latest technological developments question 14 (Benutzt du die Funktion der maschinellen Translation in generativen KI-Tools wie ChatGPT? Wenn ja, warum? Wenn nein, warum nicht?) was added as well.

After presenting the questions that participants answer in 3.1 to 3.3, the next chapter will describe which methods will be applied to analyse these answers.

3.5 Qualitative Content Analysis by Mayring

The live interviews, after being transcribed, are analysed according to Mayring's qualitative content analysis. This analysis was chosen because of its aim to provide a tool that follows a system and guarantees intersubjective verifiability, as well as to do the multifacetedness of material in the form of language justice (Mayring 2015). It is especially useful for this thesis as the aim is to find common viewpoints among Austrian foreign language teachers and while not everyone is going to use the same words to describe something, it is very well possible that the participants basically talk about the same viewpoint. Qualitative content analysis makes it possible to get to the basic information that participants give and makes it comparable, hence, a more general point can be drawn from different ways a circumstance, or an opinion is described. Reductive processes and inductively forming categories are a goal of qualitative content analysis. (Mayring 2015)

Of course, qualitative content analysis has techniques that were applied to the material of this thesis. The material is put into a communication context and a decision about which part of the communication process the analysis will be based on has to be made. The qualitative content analysis has to be systematic and led by rules, therefore, a decision about which analysis model will be followed has to be made as well. The formation of a categorial system is the main goal of qualitative content analysis. The chosen technique has to fit the material. The outcome of a qualitative content analysis is not a completed result but a result which is to be tested in pilot studies. In the case of this thesis, however, the goal is to create a categorial system, which can be tested at a later point or by other researchers, a pilot study

would exceed the scope of this thesis. The quantitative part will nevertheless be compared to the categories found during the qualitative content analysis, this is, however, the subject of a later chapter. The goal of the qualitative content analysis in this thesis will be to create a categorial system and compare it to the results of the online survey. Altogether the results will still be in the scope of qualitative research but can be used later for research in a bigger scope.

The steps of the content analysis are described here, and the complete analysis can be found in the annex. They are the following: firstly, the material has to be chosen, in the case of this thesis the material consists of five interviews with people who are language teachers in Austria. Secondly, the situation of the material's emergence has to be analysed. Thirdly, the formal characteristics of the material will be described. The next step would be to formulate the questions of the analysis. In the case of this thesis, the research questions have already been defined earlier. The fifth step is to describe which direction the analysis will take, and which goal the analysis will serve, to be more precise. In this case, the focus will be on contingency. Certain specificities will be defined before the main analysis can begin. Again, the main goal of the thesis is to encapsulate the material, therefore, the procedure model of summarising content analysis is chosen as the best option for this purpose. The model can be viewed in Figure 6.

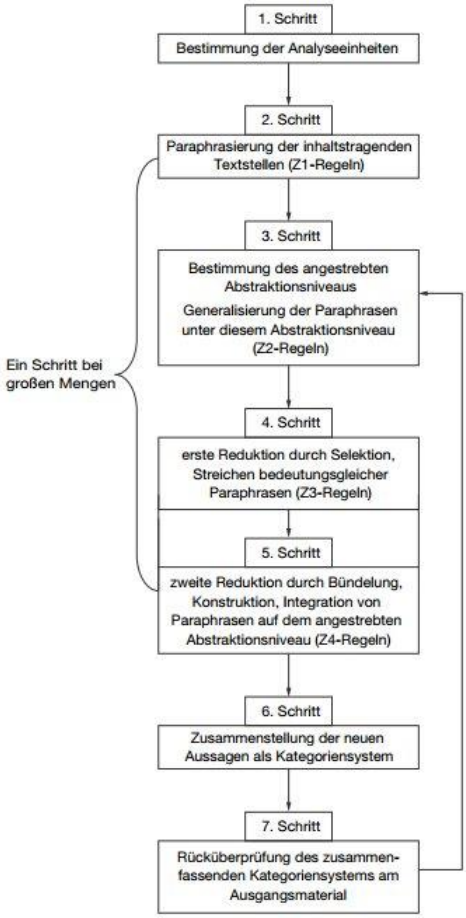

Figure 6 (Mayring 2015:70)

This means that the material will go through different stages to obtain its essential meaning. First, all text units will be paraphrased, in this thesis the paraphrasing will include the step of translation into English, and then a generalisation to the level of abstraction needs to take place. The sense of the generalisation must mirror the sense of the text units. After that, the first reduction is taking place. Abstractions that carry the same meaning will be bundled into one paraphrase; meaningless abstractions will be discarded. Finally, a second phase of reduction follows and meaningful bullet points that represent the material as a whole will be the final product of the reduction process. A categorial system is established.

3.5.1 Definition of the material

The material for the qualitative content analysis consists of five individual interviews with people who work as foreign language teachers in Austria and who were asked questions

concerning their use of NMT tools in their classes and their private lives. The transcripts used for the analysis are the complete material gathered during live interviews, specifically led to answer the research questions of this thesis. The five participants were the following:

Participant A: a teacher of English in a special school, who also used to teach in other schools and acted as a private tutor as well.

Participant B: a teacher of English and Italian in a private school in second-path education and used to teach AHS (allgemeinbildende höhere Schule - grammar school), BHS (Berufsbildende höhere Schule - vocational school with higher education entrance qualification), HAK (Handelsakademie - commercial high school) and HAS (Handelsschule - commercial school).

Participant C: a teacher of German as a foreign or second language in a government-funded programme, who also acted as a private tutor and is now on maternity leave.

Participant D: a teacher of German as a foreign or second language who works as a private teacher and is in the process of joining a private language school.

Participant E: a teacher of English and Italian in an AHS.

The participants are all equipped with the formal education necessary to act as foreign language teachers.

3.5.2 Analysis of the interview situation

Participation in the interviews was voluntary. All participants were explained the purpose of the interview and signed a form of consent to being interviewed. The interviews with Participant A-D were led via different video call platforms and recorded on the phone by the interviewer. Participant E preferred to lead the interview in written form, they were sent the questions digitally and sent the answers digitally as well. The fact that everybody was already used to communicating via video call platforms and the fact that the participants and the interviewer already knew each other led to an agreeable interview atmosphere and possibly more openness in answering the interview questions.

3.5.3 Formal characteristics of the material

The consent forms and recordings of the interviews are saved in password-protected files. The interviews were transcribed by the interviewer with the help of Microsoft Word's dictation application. The interviewer translated the interviews from dialect to standard German, added parts that were misunderstood or missing, added punctuation marks and counterchecked the material afterwards. The format was left in Microsoft Word's standard formatting as the transcripts will not be part of the thesis.

3.5.4 Direction of the analysis

The material consists of opinions of foreign language teachers on NMT tools in language learning and in their private lives. This thesis aims to get the gist of teachers' current attitudes towards NMT tools. In accordance with the content-analytical communication model, the main aim of the analysis is to filter out more generalist statements about this topic, hence, the focus is on the topic itself and not on the participants and their background or the target audience of this thesis.

3.5.5 Theory-led formulation of the research questions

This part can be found earlier in this chapter. The research questions have been drawn from earlier research. It is, therefore, appropriate to say that the formulation of the research questions is led by theory. The survey questions are based on the same literature as the interview questions.

3.5.6 Summarising Qualitative Content Analysis

For the analyses, one-word-sentences will be considered as much as longer sentences. To be clearer, every unit of meaning will be considered, disregarding its length. These units of meaning will be generalised and then reduced to meaningful statements that correspond with the essence of the interviewees' statements. These steps can be tracked in the appendix.

After presenting the research questions and methodology in this chapter, vital details and findings of the analyses will be shared in the next chapter.

4. Analysis

The following subchapters will provide information about the analysis and findings of both the online survey and the interviews.

4.1 Analysis of the online survey

The online survey was automatically analysed by empirio.de. The findings are presented in 4.2.

4.2 Findings of the analysis of the online survey

The data of a total of 33 participants are taken into account. The charts presented in this hereinafter depict percentages, but total numbers (t = x) are added for a better overview.

All 33 participants at the very beginning were asked about their age (Figure 7) and their highest educational achievement (Figure 8).

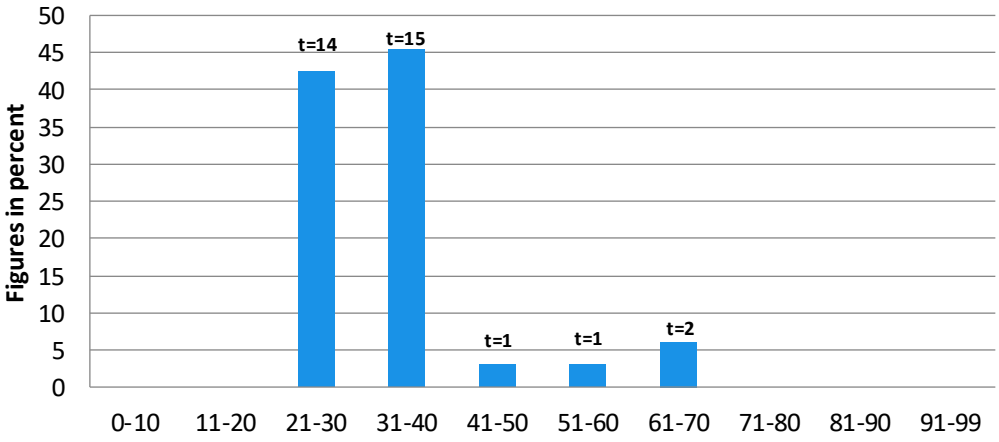

Figure 7

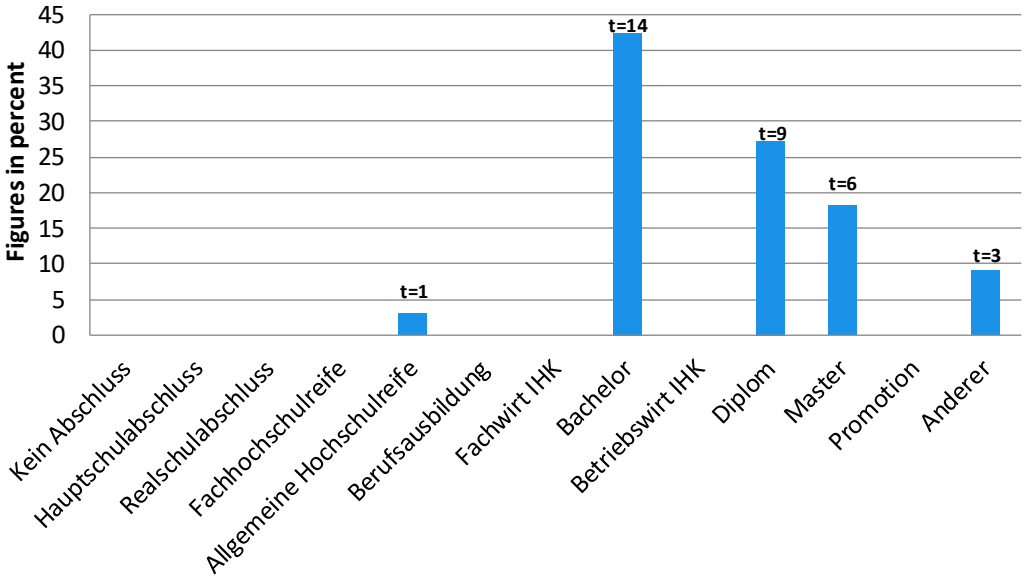

Figure 8

29 of the 33 participants were language teachers in Austria, and 4 were not. Those 4 were immediately directed towards the end of the survey because they did not meet the qualifying of the survey's focus group.

The remaining 29 participants were asked for their mother tongue. 26 participants named German as their mother tongue, one participant named German and Farsi, one Serbian and one Bosnian, Croatian and Serbian.

Of the 29 participants 21 said their mother tongue did not differ from their academic language, 6 said it did and 2 chose not to answer the question.

When asked for their academic language three participants named English, one participant named English and Italian, one participant named German and one participant named standard German in comparison to their local dialect.

The participants who were language teachers in Austria were now asked which foreign languages they spoke. English was named 28 times, French was named 12 times, Italian was named 11 times, Spanish was named 7 times, German was named 2 times, Swedish was named 2 times, Greek was named two times, Russian was named once, Latin was named once, Hungarian was named once, Turkish was named once, and Polish was named once. One participant misunderstood the question and said they taught German, their native language.

Next, the participants were asked which languages they taught. English was named 16

times, German was named 15 times, Italian was named 6 times, and French was named once. The teachers were asked which language level they taught; their answers are depicted in Figure 9.

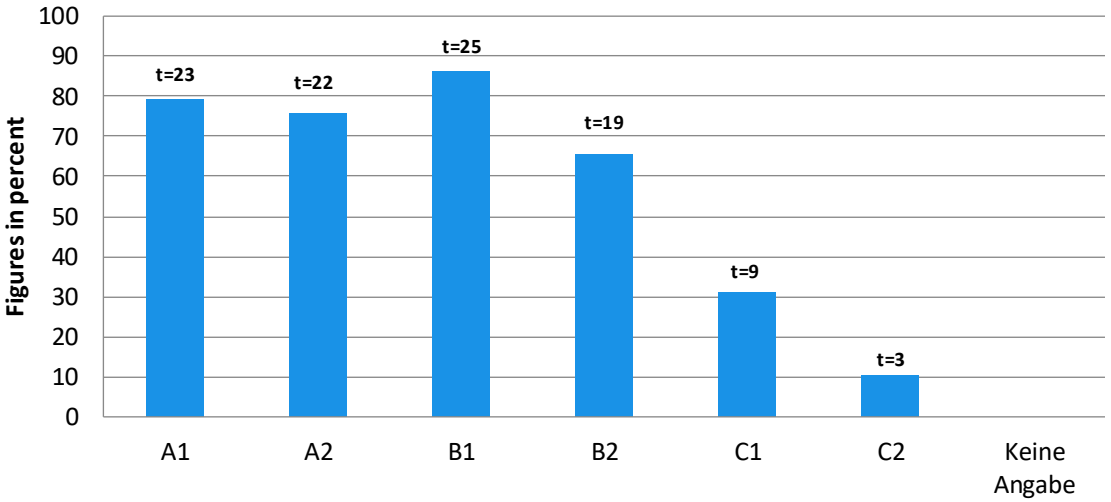

Figure 9

When asked if they knew the term neural machine translation, 18 said no and were directed to the question after next. 11 said yes. These 11 participants were asked from which context they were mainly familiar with NMT. Their answers can be found in Figure 10.

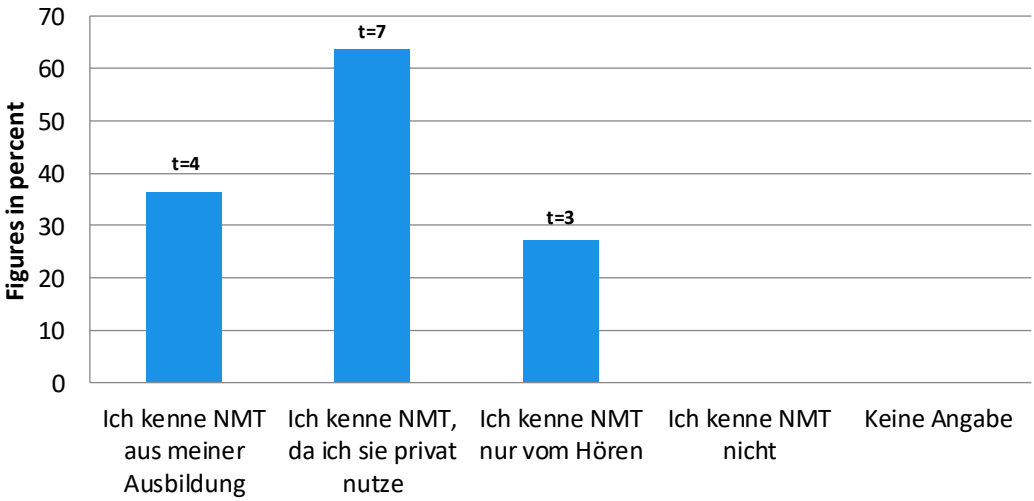

Figure 10

The next question was posed to all 29 participants, who were teachers in Austria. The answers to the question of which NMT tools they had already used can be found in Figure 11.

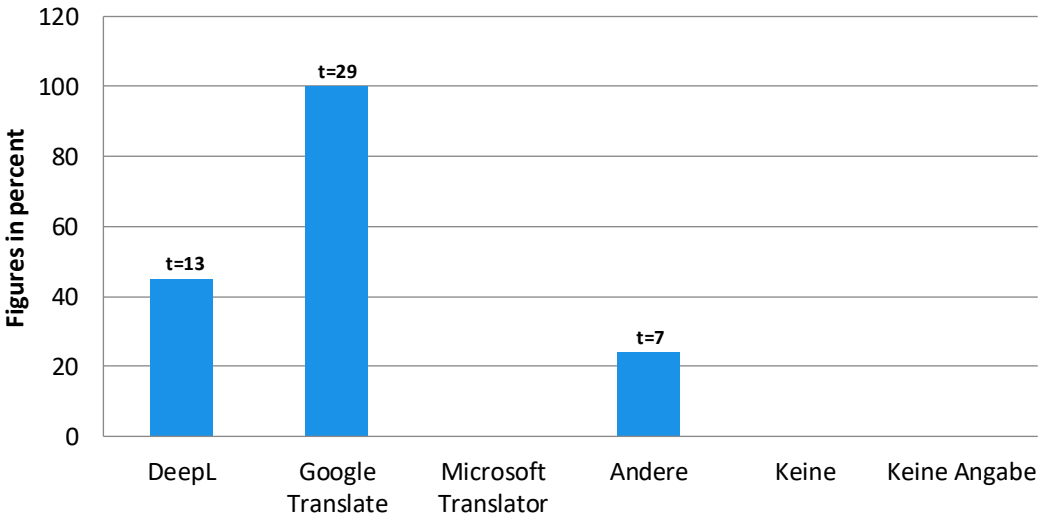

Figure 11

Google Translate was the most used tool. The participants who stated to have used other tools were asked which ones they had used. The answers were ChatGPT (4 times), dict.cc (2 times), leo.org (2 times), Linguee (once), Riverso Context (once), Pons (once), and online dictionaries (once). In the answers, no distinction was made between NMT tools, online dictionaries, and the translation function of generative AI tools.

When asked how often the participants used NMT tools, the answers varied. Details can be found in Figure 12.

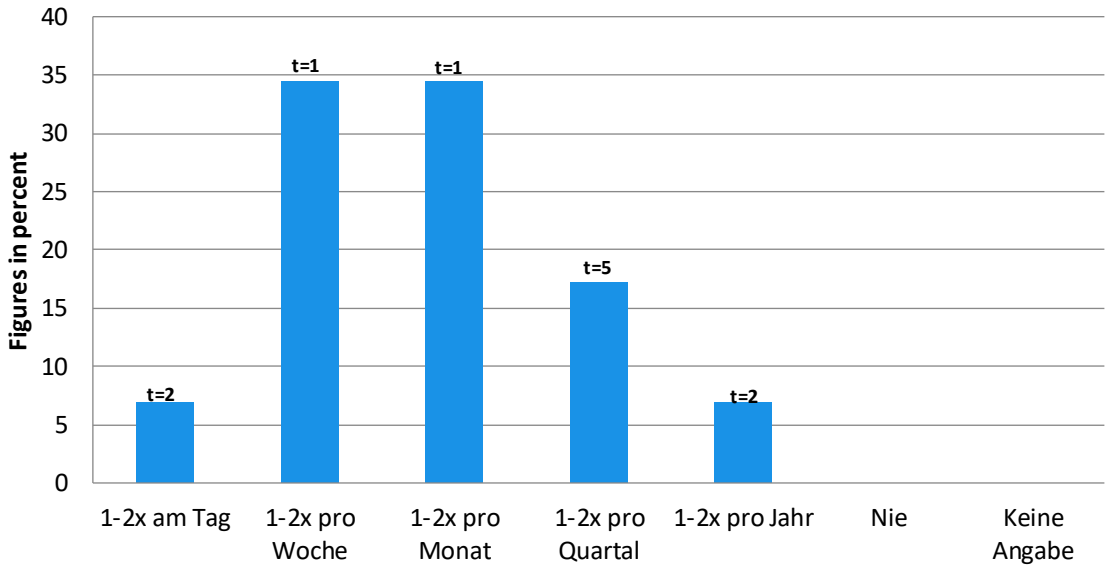

Figure 12

The answers about the purpose of their use of NMT tools were the following: 16 used them for reading texts in a foreign language, 8 used them to communicate with speakers of other languages, 9 used them as a base for writing texts in foreign languages, 13 used them to find out how well they worked and 7 said they had other reasons. Nobody skipped the question.

When asked what the other reasons for their using the NMT tools were, the answers varied: one participant stated they used NMT tools to translate certain wordings, like idioms. Another participant said they used it to check their language knowledge and to get new input in the form of other words. Using NMT tools for subtitles on YouTube and Netflix was another answer. One participant stated they used NMT tools if they could not think of the right words. One participant said they used NMT tools for revision. Another one said they used NMT tools to look up words they found interesting, and they did not know before while watching movies or reading books. One participant stated they used NMT tools for translating school forms like letters to the parents. One more reason was to check their work for mistakes.

The following questions focused on teaching rather than on the teachers' personal use. When asked if they used translation in general as a teaching method, 6 said they did, 22 said they did not and one preferred not to say.

The 6 participants who used translation as a teaching method, were asked in which

languages they used the method. English was named 5 times, German 2 times, and Italian, Serbian and Russian once.

When asked about the language level on which this method is employed, all language levels were named. A1 was chosen twice, A2 was chosen three times and levels B1 to C2 and the answer “for all levels” were chosen once.

When asked about the language direction, 3 participants chose from classroom language to foreign language and all six chose from foreign language to classroom language.

All 6 stated, that they used it in vocabulary exercises, 4 in grammar (in context) exercises, and no one used it for text production.

All 6 further stated that they used translation in the context of reading competency, 3 for writing competency, 3 for listening competency and 3 for speaking competency.

Next, the 29 participants teaching in Austria were asked if they integrated MT into their teaching. 7 said they did, and 22 said they did not.

The 7 participants saying yes were asked about the purpose of their integrating MT into their teaching. One participant said they used it as an online dictionary and put the time factor in brackets. Fast translation into the native language, teaching pupils how to use it properly due to them using it anyways, explaining unclear terms, using it as a dictionary for writing and vocabulary exercises, and showing strengths and weaknesses of MT were the other reasons given. One participant misunderstood the question and stated they used it seldomly and only “DeepL Write” if at all.

When asked for the languages for which they used MT, one participant answered they used it in all languages and put “Pons online dictionary” in brackets. 4 teachers said they used it for English, 1 said they used it for German, and one said they used it for Spanish, Turkish, Romanian, Serbian and Croatian.

When asked about the language direction they used it for, 7 out of 7 used it from classroom language into foreign language and 6 out of 7 from foreign language into classroom language.

The 7 participants were asked on which language level they integrated MT. Their answers can be found in Figure 13.

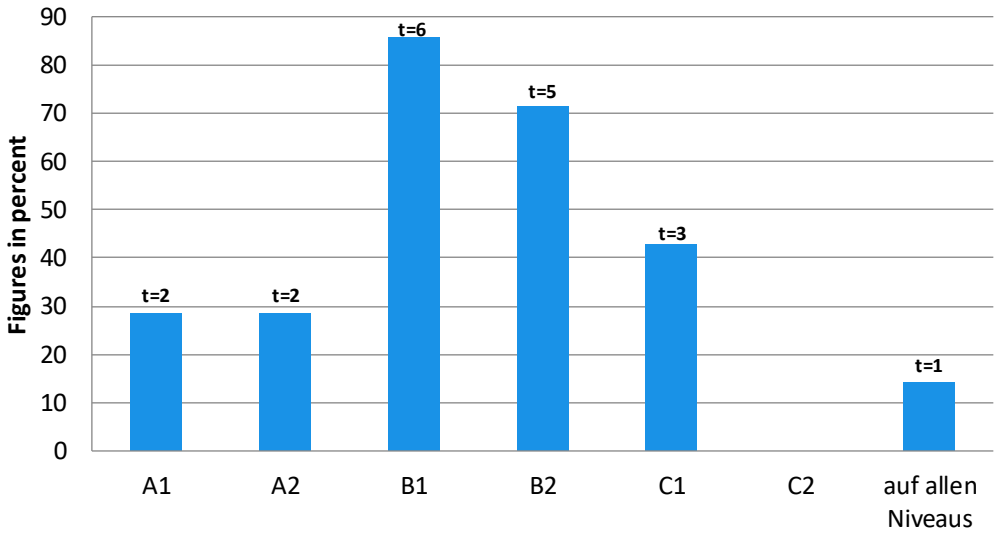

Figure 13

5 teachers used it for vocabulary exercises, 1 for grammar (in context) exercises, and 6 for text production. 6 used it for reading competency, all 7 used it for writing competency, 3 used it for listening competency, and 3 used it for speaking competency.

The following 5 questions, posed to the 29 participants teaching in Austria, were of a more general nature.

When asked if they found NMT tools easy to use, 22 said yes and one said no. 6 preferred not to say.

27 found NMT tools practical in day-to-day life. Zero participants found them impractical and 2 preferred not to say.

When asked if NMT should be a fixed topic in language education, 14 participants said yes, 9 participants said no and 6 participants preferred not to say.

Next, the participants were asked if they would like to make NMT a topic, in case of it not yet being a topic. 19 participants said yes, 9 participants said no, and 1 participant preferred not to say.

Next, the participants were asked whether language education in its current form has to change to prepare learners for praxis. 15 participants said yes, 10 said no and 4 preferred not to say.

In the pages of this chapter, the hard facts gained from the online survey were presented. The implications of these findings will be discussed in 5.2.

4.3 Qualitative Content Analysis of the live interviews

The complete Qualitative Content Analysis can be found in the Annex. After summarising the information through paraphrasing, generalisation, and reduction, a system of categories was established and led to condensed observations, which will be presented in 4.4.

4.4 Findings of the Qualitative Content Analysis

The role NMT tools play in language class varies. NMT tools sometimes are not a topic in class or group settings. Other times they are a topic and there are rules for using them. Participant E said: "NMT tools are definitely a topic that is discussed in class. Recently, however, the discussion has tended to be dominated by the use of ChatGPT." Other teachers report that NMT tools play a role sometimes in singular situations or when they are helpful, are allowed in certain situations or are forbidden in specific situations because learners are supposed to write and speak independently. Teachers in this study acknowledged that NMT tools provide self-assurance for learners, are aware that learners use or at least might use NMT tools and understand that for some learners or parents of underage learners, NMT tools are a necessity in daily life. Participant A mentioned: "Especially the parents, for example, when they have a meeting with me, they sometimes type something into their mobile phone because they don't know the German terms and yes, this is definitely an issue there."

Participating teachers' opinions on how and why to use or not use NMT tools in language education in a sensible way vary as well. It is commonly known that NMT tools exist, that is why they are of interest to language learners. Some think there are options of creating exercises that incorporate using NMT tools and their outcome could be beneficial to learner improvement. Participant B suggested: "[You] compare what you wrote to what was spat out, how can you take what was spat out to improve yourself?" Others report that due to NMT tools text writing has become an in-class activity. Teachers proposed that NMT tools can be used by beginners, to countercheck texts, for working on vocabulary, or for removing or preventing ambiguity as a teacher. Participant C explained: "The foreign language she spoke better was English, so I prepared myself several times using Google Translate." Other aspects were also mentioned: NMT tools are impractical for dialogue exercises, forbidding NMT tools, however, makes no sense and there is a need to create possibilities to use them, forbidding NMT tools is impossible, the only option is to tell learners not to use them,

overusing NMT tools is not profitable, especially for long-term knowledge. They should not replace skill training. Learners should become independent language users and it is important to use NMT tools attentively.

Participants also spoke about advantages and purposes of NMT tools. According to participating teachers NMT tools are useful for understanding unfamiliar languages easily, rechecking translations and texts, preparing for travelling, travelling, and gaining information while travelling, communicating with speakers of a different language, motivating learners, reducing shyness when learning a new language, improving learners' language level, translating, writing texts, and time management. NMT tools are found to be useful in situations that do not require high accuracy. As Participant B put it while talking about NMT tools and travelling: "[...] then it does not have to be 100% correct because when I read it in German with 3 grammatical errors, I still understand what is meant." Obtaining multiple translation suggestions is an advantage of NMT tools according to participants. There is no use for NMT tools in some teachers' private lives. There is a difference between using NMT tools in private and when learning a language according to some participants.

Disadvantages and limits of NMT tools were a topic as well. It was found that NMT tools cannot be used for translating complex content, in the context of exams, in the context of oral text production and should not be used when a learning effect is required or in situations that can lead to extensive consequences. Overusing NMT tools leads to failing the objective of language learning and disturbs error culture. In general ambiguity poses a problem. Participant E said: "I see the limitations in the fact that translation tools provide literal translations and cannot, of course, take the context into account. Ambiguity can of course also be a problem."

Teachers' private use of NMT tools was discussed as well. NMT tools are either not used in a private context or for fun or while travelling. Participant C mentioned: "[…] only for Connections for this game we used Google Translate for example." NMT tools are, however, used if there is no other option and it was again made clear that using NMT tools for fun is different from using them in serious situations.

When asked about the nature of NMT tools and AI the participants stated that there are two sides to using NMT tools and how NMT tools are used defines their usefulness. Using NMT tools/AI intelligently poses support and NMT tools are seen as an aid. According to some of the participants, tools that ease understanding are to be seen positively. It was often made clear that NMT tools are neither to be deemed as generally bad nor a threat, as NMT does not replace the human ability to think and will not become more intelligent than we are.

Others considered NMT tools taking over the human ability to think is an aspect to be taken into consideration and care is required when using NMT tools.

Opinions on NMT tools and AI replacing current language education were mostly unisono. Language class will not be substituted by new technologies. Many aspects of language education cannot be replaced by AI because learning a language is just one of the parts of language education. Other parts are cultures and interhuman relations. However, it was found that learning with online tools is a great possibility. It was clarified that individually customised language teaching is different from online language learning. One participant was not sure about the topic and thinks it cannot be known for sure that language class cannot be replaced, only time will tell. Language teaching might change its form or language teachers can be replaced by AI. Participant D said: "I mean, probably everything can be replaced with artificial intelligence at some point, maybe we still have a few years or decades until that happens."

When asked about competences taught in language class other than the language itself a list of competences and values that are imparted through language education were found consisting of cultural knowledge, equality, anti-racism, solidarity among people, interpersonal relations, apprehending texts quickly, country-specific knowledge, dandling day-to-day life, non-verbal competences, language-specific knowledge, self-awareness in a language, knowledge about the language area, intercultural competences and critical thinking. It was stated that AI is not capable of transmitting interpersonal relations.

The possibility of successfully communicating without the earlier mentioned competencies were also discussed with the participants and it was found that successful communication cannot take place without additional competencies. Some participants thought that business communication might work without additional competencies. Face-to-face communication, however, cannot take place without additional competencies. Nonverbal skills are said to be important for interhuman relations. It was mentioned that language education can happen online but not without direct communication. Language learning without a teacher is very hard. Making mistakes and correcting them is regarded as essential to language learning. This essential part is missing in NMT tools. Participant C emphasised: "Errors do happen directly in conversation, and you may or may not correct them when speaking, for example, but I think it's important to convey that errors can happen and that they are also quite normal for native speakers, and this case, for example, is completely absent with machine translation." Other viewpoints that appeared were that learning a language without interhuman relations is possible. It is difficult but feasible. Communication can be

partly successful without additional competencies, but communication without additional competences will be shallow.

Teachers have many ideas when asked about the need for change in language education. It was found that change and improvement of language education is always a possibility and there is room for improvement. Implementing Content and Language Integrated Learning (CLIL) everywhere is a step to be taken. Some teachers find that there is not enough time to teach languages properly. One participant thinks that the whole school system has to change. It was criticized that there is a lack of contact with native speakers and that language class design should be more open. It was found that there is no comprehensive answer. Others stated that language education does not have to change and suggested that error culture should be maintained. The focus of language education should shift to speaking and listening, however, for a higher level, speaking and listening are not enough. One participant thinks that writing can be outsourced to NMT tools, and that language education has to adjust to the new reality of life. It was stated that evaluation and grading will have to shift the focus to the text production process. Participant E elaborated: "I can imagine that in the future, especially in the assessment and evaluation of student assignments, it will be less about the finished product and more about the writing process itself, for example, planning, drafting and revising a text."

In the end the participating teachers' private use of generative AI tools was addressed. Interviewees do not use generative AI because according to them there are only disadvantages, there is no need in a professional or personal context, they find that NMT tools are sufficient and using them takes fewer steps. Some participants use generative AI out of curiosity. Participant B explained: "I have already used it once, out of curiosity about how well it works. But I don't use it regularly because I simply don't need it in my current field of work as well as in my private life." Some participants can imagine using AI in the future.

After presenting the findings in this chapter, an interpretation of the findings and a comparison between the findings of the Qualitative Content Analysis and the interviews can be found in the next chapter.

5. Interpretation

In this chapter, the findings will be put into context and discussed, and the research questions will be answered.

5.1. Interpretation of the Qualitative Content Analysis

As made visible in the analysis of this study's data, the role of NMT tools in the participants' language classes is varied. NMT tools are sometimes allowed or used in certain class settings, there are rules on using them in some classrooms. NMT tools are other times not even a topic in class or their use is forbidden in certain situations. In any case, teachers are aware that learners use NMT tools or at least suspect they might be using them. This implies that in some cases NMT tools are underrepresented in an educational context compared to them being used by many learners in language class. Other times language classes are structured in a way that recognizes learners' use of NMT tools and guides the learners to sensible use of these tools, which should be supported according to many researchers of the recent past (Niño 2020, Lee 2020, Chung 2020, Chung & Ahn 2021, Kelly & Hou 2021, Wang & Ke 2022, Maimone & Jolley 2023, …).

Asking teachers if they can imagine sensible ways of integrating NMT tools into language class led to the acknowledgement that there are a number of ways to do so and that it is of interest to language learners because these tools are so commonly used. Teachers listed a variety of options on how to integrate NMT tools into language class and why to do so, such as counterchecking texts, working on vocabulary or preventing ambiguity as a teacher. Counterchecking texts could be useful indeed, according to the idea of writing texts and then improving them with a machine-translated text, which was mentioned in the literature review. Working on vocabulary might benefit more from a tool that shows different options and contexts at once. Removing ambiguity as a teacher can be helpful, especially if learners do not understand instructions and do not speak the same language as a teacher, although there is the risk of creating even more ambiguity and other options like explaining again or showing examples might be more helpful. Teachers also talked about areas and situations in which the use of NMT is inadequate or not useful, such as dialogue exercises. One can imagine that using NMT tools and even other tools like online dictionaries would have an impact on a fluent dialogue. Some teachers also spoke about the consequences of using and relying on NMT tools too much, they fear that it is not profitable for long-term knowledge. So far

research on long-term effects of using NMT tools in class is scarce, so it is hard to say whether this fear is justified. It was also mentioned that forbidding NMT tools is not an option, which makes sense because they are easily accessible and will be used either way, as was mentioned in the literature review. These impressions show that the participants have at least thought about integrating NMT tools into language classes and about the options they have to do so.

When the interview participants were asked which advantages NMT tools carry, many positive aspects were listed, especially in terms of languages unknown to the participants. This implies that NMT tools are regarded as useful whenever the participants cannot rely completely on themselves. In terms of learners improving their language level and reducing their shyness was mentioned. This seems logical, as saying something that is expected to be correct takes less confidence than trying to say something that is suspected to be wrong, although this is not something that can be generalized. Better time management was also mentioned as a positive aspect, which is indeed positive as long as it is not necessary to have a quality-assured text. Altogether, the positive aspects that participants saw in NMT tools were of a practical nature. One important point made was that NMT tools are useful in contexts that do not require high accuracy. Regarding these findings, it is sensible to assume that the participants see NMT tools positively in a low-accuracy context. Language learning was mentioned scarcely; hence, it is presumable that most teachers do not see NMT tools positively in the context of language learning effects. As stated before, using NMT tools for private matters is seen differently from using them for learning matters. This could, however, possibly change if the participants had broader knowledge about and experiences with NMT tools.

The negative aspects participating teachers saw in NMT tools were more concise but significant. There is a clear picture of the areas where teachers would rather avoid NMT tools. In complex texts and instances, or situations where interaction is required, as well as whenever a learning effect is required, the use of NMT tools is seen as unhelpful. Ambiguity occurring during the use of NMT tools is seen as problematic in general. Putting all aspects together, it can be said that the use of NMT tools is welcomed in situations that do not require high accuracy, but whenever high accuracy is demanded NMT tools are deemed as not useful. This is in some way in contrast to some findings of researchers who promote NMT tools for text writing to improve accuracy (for example Bahri & Mahadi 2016, Correa 2014, or Niño 2008). It also differs from findings that teachers think more highly of NMT tools once they work with them (Deng & Yu. 2022). The reason for these differences might descend from the

participants' use of NMT tools. Many of them avoid them in the classroom, do not have enough experience with them, or have no concept of how to integrate them. Nino (2009) came to a similar conclusion, finding that teachers were mostly unaware of which teaching options MT (NMT was not a topic in the era) already provided. It makes sense, that without experience and knowledge, there is a lack of confidence in NMT tools.

As to how the participants use NMT tools in their private lives, there were mixed answers. Some do not use it at all, others use it only when there is no other option. If NMT tools are used, they are used only for travelling or leisure activities. This creates the same impression that can be drawn from the positive and negative aspects teachers see in NMT tools, in particular, that NMT tools can and should only be used in low-stakes environments. This is understandable, as NMT tools are not flawless and not able to clear up a misunderstanding.

Interviewees were next asked a rather polarising question, specifically if they found NMT tools to be a useful aid in everyday life or if these tools were a threat to human thinking ability. The wide consensus was that NMT tools were to be seen as something positive, but that care was required when using them, and, however they were used defined their usefulness. One teacher mentioned AI as well and their opinion was that both NMT tools and AI can be a support when used intelligently. This means that knowledge about the tools and experience is required to understand how and when to best use them. Once a kind of best practice is established, making use of NMT and AI will lead to helpful output. Another teacher thought that NMT tools overtaking human thinking was something to be taken into consideration. It can be said that teachers are aware that NMT tools and AI do not have a nature themselves but that users have to decide how they use them, and these actions will lead to the actual usefulness or non-usefulness of NMT tools and AI. That speaks in favour of Bowker & Buitrago Ciro's call for a higher MT literacy.

When asked if NMT tools and AI could replace language classes, the wide consensus among interviewees was that that was not possible because many aspects cannot be transmitted through these tools and depend on interhuman relations. One interviewee had a differing opinion and thought that in the future language class might be replaced, because the tools change and improve rapidly and at this point, we do not know how well they could be working one day. It can be presumed that most language teachers do not feel threatened by NMT tools. Teachers who were asked the same question in Deng & Yu. (2022) came to the same conclusion.

Another key point was that language teaching might have to change its form. This

view was supported by a list of competencies the interviewees reported to be transmitted other than learning the language in language class, such as cultural knowledge, equality, anti-racism, solidarity among people, interpersonal relations, apprehending texts quickly, country-specific knowledge, handling day-to-day-life non-verbal competences, language-specific knowledge, self-awareness in a language, knowledge about the language area, intercultural competences and critical thinking. While knowledge can be acquired through different sources, it might not be prepared as learner-friendly as in language class. The crucial points are represented by the given examples that require interhuman exchange.

Teachers expressed different opinions about successful communication being possible without further competencies. The opinions ranged from "successful communication can take place without those skills in a certain environment" to "it is impossible because it depends on interhuman relations". The main impression gathered from the answers is that it might be possible under certain circumstances but is not favourable according to the participants. It is sensible to say that successful communication relies on the goal of communication and the context in which this communication happens.

When the participants were asked if they felt there is a need for change in language education to support learners in preparing for the current technological reality it was obvious that the teachers who were teaching in primary language education felt at least parts, such as focussing on speaking, providing the possibility to speak to native language speakers or a more open lesson design, had to change. Teachers working with grown-ups have enough freedom in organising their lessons and do not feel a pressing need to change things. It might be true to say that change is wanted where it cannot be implemented independently.

Lastly, the interviewees were asked if they used generative AI tools and their translation functions in their private lives. None of them do, some tried it before, but none see a reason to use generative AI because they either find it disadvantageous, have no need for it or find NMT tools sufficient and more practical. Currently, there seems to be a tendency to find generative AI insufficient to have real use, but everyone agrees to maybe use it in the future. It is to be considered that there are many options for implementing AI in work environments. AI might not be useful for the act of teaching while there could be ways to implement it into lesson planning or organizational aspects that could profit from it.

5.2. Interpretation of the online survey analysis

The term Neural Machine Translation is not a very well-known term among the participants of the survey. Most of the participants who knew NMT connected it to their private life. This fact allows the thought that NMT is a widely disregarded topic in the education of language teachers. Regarding the fast developments NMT tools and AI make, this is not timely. Implementing NMT tools in teacher's education could lead to a broader understanding of the topic and help to improve teachers' and learners' user competence. Primarily, awareness about NMT could be raised.

Google Translate was the most widely used NMT tool among teachers. Teachers who said they used other tools also named online dictionaries and the translation function of generative AI, hence, the sense of what is and what is not an NMT tool is widely missing among participants. This also speaks to NMT tools being disregarded in the education of language teachers and supports the opinion of Bowker & Buitrago Ciro that there is a need for machine translation literacy in the scholarly community. A lack of understanding of the tools available makes it hard to see NMT tools as an aid. A broader knowledge of the differences between online dictionaries and NMT tools could help the wider implementation of NMT tools as a helpful part of language learning.

Asking for the frequency of participants using NMT tools it became clear that many participants use them at least sometimes, most once or twice a week or a month. This means that NMT tools have entered the participants' everyday lives at least partly. Indeed, people do not necessarily have to exactly understand every tool they use, while basic knowledge about the tools can be helpful in deciding when and how they are best used.

The application of NMT tools varied a lot, the majority of participants used them to be able to read texts in a foreign language, in second place there is finding out how well they work, and in third using them as a base for writing texts in a foreign language. Communicating with speakers of a foreign language was also given as an application. This means that the participants are already aware of a spectre of activities in which NMT is useful, solely they seem to be unaware of how to implement them into their professional lives.

The questions changed the direction a bit at this point and focused on translation and NMT tools in class. It turns out that the majority of teachers are not using translation as a teaching method. Yamada (2019) mentioned that translation did not use to have a high reputation in language acquisition. This still seems to be true for the participants of this

survey.

Only a minority of teachers integrate MT into their teaching. They mostly use it for vocabulary matters, seemingly instead of online dictionaries, however, this remains unclear, because some of the participants who said they used tools that are not NMT tools per definition also answered this question. Only a small number of teachers include this topic in their language class, offering a theoretic frame for this topic. If they do, they try to explain what it can and cannot be used for and speak about the advantages and disadvantages of NMT tools or what they understand as NMT tools. However, a minority of teachers implementing NMT tools into their classes is already a start. It would be beneficial to better general understanding of NMT tools if more and more teachers would do so. It must not be forgotten that the languages in which MT is used during class are the languages taught, but they are also used in languages not taught, so it is presumable that they are used to communicate with learners, or their parents or legal guardians.

Both the integration of translation in general and NMT tools are relatively low. Although the experiment sample was very small, this evidence points to the possible usefulness of instructing language teachers in Austria on how to implement NMT tools into their language classes, so they can meet the learners' needs.

The vast majority of the participants finds NMT tools easy to use. Most of them found it practical in day-to-day life. This speaks to a positive attitude towards NMT tools. However, concerning NMT tools in class, the answers are mixed. While almost half find that NMT tools should be a fixed topic in language education, the others were of an opposing opinion or preferred not to say. It shows that in comparison to the day-to-day NMT tools in class are seen differently by the participants. This could be the fact because of a lack of knowledge about NMT tools. However, when asked if they wanted to make NMT a topic in class a majority of participants said yes, which again shows a positive tendency towards NMT tools.

A small majority of teachers seem to find language education as it is not up to date regarding preparing learners for the praxis and find it has to change. This shows that there is a professional interest in NMT tools among participants, which is a further argument for implementing NMT tools into language teachers' education.

5.3. Comparing both analyses

In this subchapter answers to questions with the same content will be compared. First of all, it was interesting to learn how teachers use NMT tools, there is a broad variety of answers, as stated before they range from not using them at all to using them for quickly looking something up and to bigger projects like writing a foreign language text or checking their own writing. How NMT tools are used depends a lot on the context, professional or private, which leads to the (not verified) assumption that everyone has their own set of values for using NMT tools. It is recommendable to introduce a universal set of values in a professional context. Regarding the integration of NMT tools into language class, the majority of participants in the online survey do not and the interviewees also mostly do not integrate it into class actively. It seems that something is still missing that would motivate teachers to integrate NMT tools into language classes and it might be trust in this technology as most participants from both surveys seem to use NMT tools only in a low-stakes context, although NMT tools are useful in a broad range of contexts. It is obvious from both the interviews and the survey that NMT tools are not a fixed topic in a language class, even though many of the participants are using them. 27 years after Lewis (1997) described how important it was for translation students to learn about MT systems because they will have to work with them, almost everybody is using NMT tools not only for work but in everyday life and language education but as suggested by the answers of the interviews and survey many without being made aware of what the limits of these tools are and at the risk of misusing them to their disadvantage. The survey and the interviews, however, show that there are teachers who would like to integrate NMT tools into language classes and interviewees presented a range of ideas on how to do so. Both, most of the interviewees and online survey participants, agree that language education that is not freely designable has to change to prepare learners better for the praxis, according to the interviewees, at least parts, even if only small ones, would have to change. The detailed wishes for these changes remain unexplored for now. It can be stated that integrating NMT tools into language teaching and language teacher education is something that might be beneficial.

5.4 Answering the research questions

At this point, it is important to remember the research questions which were:

1. What are current attitudes towards NMT tools among foreign language teachers in Austria?
2. Do foreign language teachers in Austria treat this topic in class and, if yes, how?
3. Do foreign language teachers in Austria use NMT tools privately and, if yes, what for?

Attitudes towards NMT tools among foreign language teachers in Austria are of a mixed nature but point to a positive direction. To be more exact, NMT tools are seen very positively as long as they are used in a low-stakes context, which is contradictory to nowadays' abilities of NMT tools. As soon as higher accuracy is required, doubts start setting in. Even though positive aspects were expressed, participating foreign language teachers still seem to mostly shy away from making use of them in their professional lives.
Of course, this is only true for the participants of my study and a study with far more participants would be necessary to confirm this first impression.

NMT tools are sometimes actively introduced and used in class, but more often not. If NMT tools are a topic in class, the teachers, however, use them mostly for vocabulary and text production, reading and writing tasks. Some teachers explain rules they have for the use of NMT tools and others use it to communicate with language learners at a low level of the in-class language. Further research would be necessary to get a more thorough image of the current situation in Austria's foreign language education, to implement NMT tools as a fixed part of language education, or more economically thinking to find out the needs of learners not met by language education to be able to create successful language learning programmes, apart from the ones already existing, that are based on NMT tools as also already suggested by Niño (2004).

Many of the foreign language teachers participating in the interviews or survey do use NMT tools in a private context for a variety of reasons - for example, while travelling or for games, but also to read foreign language texts or simply to try how well they work. They mostly use it in a low-stakes context.

After reviewing the findings of the thesis in this chapter, and answering the research questions, a conclusion will be drawn in the next chapter and some possibilities for further research are discussed. In the last chapter, the limitations of the thesis will be disclosed.

6. Conclusions and further research

This thesis provided an overview of NMT tools in language learning and focused on an unexplored aspect, specifically current attitudes towards NMT tools among foreign language teachers in Austria. It was found that attitudes among participants of the interviews and survey vary, but altogether point to a positive direction. However, there seems to be a lack of understanding of what NMT tools are and how they can be utilised. The findings imply that integrating NMT tools into language teaching and language teacher education is something that might be beneficial. By answering the research questions, this thesis contributes to building a bigger picture of the current situation regarding NMT tools in foreign language learning, specifically in Austria. It also contributes a small part to the puzzle of international research depicting and exploring NMT tools in language learning.

Altogether, more research on NMT tools in language learning should be done in Austria or the German-speaking language area in general. A bigger variety of research methods should be applied to this topic to learn, which aspects could be contributed through different approaches. As mentioned before, this thesis provided a first insight into current attitudes towards NMT tools among a comparatively small group of foreign language teachers in Austria, laying the foundation for future research on this topic. The next step could be to conduct a large-scale quantitative study in order to find out current attitudes towards NMT tools among a group of teachers that is representative of all language teachers in Austria, to the end of understanding where to begin with the implementation of NMT tools into language education. An overview of attitudes taken up by language learners in Austria could contribute to a bigger picture as well. In respect of implementing NMT tools into language education it would of course also be interesting to conduct a long-term study on the effects of an implementation in order to find out not only where to start the implementation but also how far an implementation should go.

7. Limitations

The number of participants in the survey and interviews is not representative of all foreign language teachers in Austria but gives ideas for the direction of further research. Most of the participants in the interviews and survey were native German speakers, a different outcome is possible if research is conducted among native speakers of other languages. They might have different experiences with NMT tools in their language pairs and might have formed a completely different attitude towards this technology. The research was not funded by and is in no connection to any company.

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9. Annex

9.1 Survey questions

Appendix B: SURVEY FOR LANGUAGE TUTORS ON THE USE OF MT FOR FOREIGN LANGUAGE TEACHING AND LEARNING PURPOSES

1. Is MT familiar to you? □Yes □No

2. Where have you heard/read about MT? □ Informal conversation □Internet □Articles □Conference □Other

If you want to have a go with MT the most accessible type is free online MT. Some sites you can browse are www.systransoft.com, babelfish.altavista.com, or www.freetranslation.com. **You will need to do so before continuing with the rest of the survey.** I would recommend you to input some general and specialised texts that you would use in your language class.

3. If you have used MT, which programs have you used? □A commercial program such as *SYSTRAN* or *Globalink* □An online MT system

4. How frequently have you used it? □Everyday □Several times a week □Once a month □Several times a year □Never

5. For what purpose have you used it? □To read texts in other languages □To get communicated with speakers of other languages via chat or email □As a draft to write in other language □For curiosity □Other (please specify)

6. Have you used **translation** as a teaching/learning tool? □ Yes □No

7. With which language pair? _____ into _____

8. With which language level? □Beginners □Intermediate □Advanced □Higher □ Improvers □ All of them

9. In which language direction? □From L1 to L2 □From L2 to L1

10. With which text types? □General □Specialised (please specify)
_____
_____

11. For what purpose? □Reading comprehension in L2 □Listening comprehension in L2 □Written production practice in L2 □Revision □Assessment □Others (please specify)
_____
_____

12. Have you used **MT** in your lessons? □Yes □No

13. **If you have used it**, for what purpose? □Reading in L2 □Written production practice in L2 □Revision □Assessment □Others (please specify)
_____
_____

14. With which language pair? _____ into _____

15. In which language direction? □From L1 to L2 □From L2 to L1

16. With which language level? □Beginners □Intermediate □Advanced □Higher □Improvers □All of them

17. With which text types? □General □Specialised (please specify)
_____
_____

18. Do you find it easy to use? □ Yes □No

19. Do you find it useful? □ Yes □No

Figure 14a Survey Questions by Niño (2009: 257)

20. Would you include hands-on practice on MT in a language syllabus? □Yes □No
Suggestions:

21. **If you have not used MT** in your lessons, would you use it? □ Yes □No

22. With which language level? □Beginners □Intermediate □Advanced □Higher □Improvers □All of them

23. In which language direction? □From L1 to L2 □From L2 to L1

24. With which kind of program? □A commercial program such as *SYSTRAN* or *Globalink* □An online MT system

25. With which text types? □General □Specialised (please specify)

26. How do you suggest that MT can be used in the language class?

27. Which advantages do you think it has? □It is fast □It is user friendly □It easily creates ready-made texts for practice □It involves professional training □It involves written production practice □It involves error detection and correction practice □The teacher can control the input text □Others (please specify)

28. Which limitations do you think it has? □Low quality □Text type constraint (not suitable for creative texts) □Bad model □It requires training □Others (please specify)

Age: □Less than 30 years □Between 30 and 40 years □Between 40 and 50 years □Between 50 and 60 years
Sex: □Masculine □Feminine
Nationality: _____ L1: _____
Level of language that you teach/have taught: □Beginners □Intermediate □Advanced □Higher□ Improvers □All of them
Comments:_____

Many thanks for your collaboration!

Figure 14b Survey Questions by Niño (2009: 258)

Survey questions of his thesis

1. Sind Sie Sprachlehrer*in in Österreich? Ja/Nein.
2. Was ist ihre Muttersprache? (Mehrfachnennung möglich)
3. Unterscheidet sich Ihre Bildungssprache von Ihrer Muttersprache? Ja/Nein
4. Wenn ja, was ist Ihre Bildungssprache?
5. Welche Fremdsprache(n) sprechen Sie?

6. Welche Sprache(n) unterrichten Sie?
7. Welches Sprachniveau unterrichten Sie? A1/A2/B1/B2/C1/C2
8. Ist Ihnen neuronale maschinelle Translation (NMT) ein Begriff? Ja/Nein
9. Aus welchem Kontext ist Ihnen NMT hauptsächlich bekannt? Ich kenne NMT aus meiner Ausbildung/Ich kenne NMT, da ich sie privat nutze/Ich kenne NMT nur vom Hören/Ich kenne NMT nicht
10. Welche dieser Tools haben Sie schon verwendet? DeepL/Google Translate/Microsoft Translate/Andere
11. Wenn Andere, welche?
12. Wie oft benutzen Sie solche Tools? 1-2x am Tag/1-2x pro Woche/1-2x pro Monat/1-2x pro Quartal/1-2x pro Jahr/nie
13. Wofür benutzen sie diese Tools? (Mehrfachaufzählung möglich) um fremdsprachige Texte zu lesen/um mit Sprecher*innen anderer Sprachen kommunizieren zu können/ als Basis zum Schreiben fremdsprachiger Texte /um herauszufinden, wie gut sie funktionieren/aus anderen Gründen
14. Wenn aus anderen Gründen, aus welchen?
15. Verwenden Sie Übersetzung im Allgemeinen als Lehrmethode? Ja/Nein
16. Wenn ja, in welchen Sprachen?
17. Wenn ja, auf welchem Sprachniveau? A1/A2/B1/B2/C1/C2/auf allen Niveaus
18. Wenn ja, in welche Übersetzungsrichtung? (Unterrichtssprache→Fremdsprache; Fremdsprache→Unterrichtssprache)
19. Wenn ja, bei welchen Übungen? Vokabel/Grammatik (im Kontext)/Textproduktion/
20. Wenn ja, bei welchen Kompetenzen? Lesen/Schreiben/Hören/Sprechen
21. Integrieren Sie maschinelle Translation in Ihren Unterricht? Ja/Nein
22. Wenn ja, zu welchen Zwecken?
23. Wenn ja, für welche Sprachen?
24. Wenn ja, in welche Sprachrichtung? (Unterrichtssprache→Fremdsprache; Fremdsprache→Unterrichtssprache)
25. Wenn ja, auf welchem Sprachniveau? A1/A2/B1/B2/C1/C2/auf allen Niveaus
26. Wenn ja, bei welchen Übungen? Vokabel/Grammatik (im Kontext)/Textproduktion/
27. Wenn ja, bei welchen Kompetenzen? Lesen/Schreiben/Hören/Sprechen.
28. Finden Sie Tools für maschinelle Translation einfach in der Verwendung? Ja/Nein
29. Finden Sie diese Tools praktisch im Alltag? Ja/Nein
30. Finden Sie NMT sollte ein fixes Thema im Sprachunterricht sein?

31. Falls es bisher noch kein Thema war, würden Sie NMT zum Thema machen wollen?
32. Muss der Sprachunterricht in der aktuellen Form geändert werden, um Lernende auf die Praxis vorzubereiten?
33. Wie alt sind Sie?
34. Was ist ihr höchster Bildungsabschluss?

9.2 Interview questions

1. Wie lange bist du schon Sprachlehrer*in?
2. Wo unterrichtest du?
3. Welche Sprachen unterrichtest du?
4. Welche Rolle spielen Tools für NMT in deinem Unterricht? Dürfen sie verwendet werden? Sind sie verboten? Sind sie ein Thema, das im Unterricht besprochen wird?
5. Könnten deiner Meinung nach Tools für NMT im Unterricht auf eine sinnvolle Weise eingebracht werden?
6. Welche Vorteile siehst du in NMT-Tools?
7. Wo liegen deiner Meinung nach die Grenzen der NMT-Tools, was können sie nicht wofür sollen sie nicht verwendet werden?
8. Verwendest du privat NMT-Tools? Wofür?
9. Siehst du NMT-Tools als Stütze im Alltag oder als eine Art Bedrohung für die menschliche Denkfähigkeit?
10. Wird der Sprachunterricht deiner Meinung nach durch die neuesten technischen Hilfsmittel verschwinden?
11. Welche Kompetenzen werden im Sprachunterricht abgesehen von den Sprachkenntnissen noch vermittelt?
12. Findest du, dass eine erfolgreiche Kommunikation auch ohne diese Kompetenzen stattfinden könnte?
13. Muss der Sprachunterricht in der aktuellen Form geändert werden, um Lernende auf die Praxis vorzubereiten? Wie?
14. Benutzt du die Funktion der maschinellen Translation in generativen KI-Tools wie ChatGPT? Wenn ja, warum? Wenn nein, warum nicht?

9.3 Complete Qualitative Content Analysis

Line	Question	Participant	Paraphrase	Generalisation	Reduction
1	1	A	Teaching languages since 2010	-	Irrelevant to the goal of the analysis.
2	1	B	Teaching languages since 2015	-	
3	1	C	Have been teaching languages for 11 years	-	
4	1	D	Have been teaching languages for 4 months	-	
5	1	E	Teaching languages since 2017	-	
6	2	A	Special school	-	Irrelevant to the goal of the analysis.
7	2	B	Humboldt-school	-	
8	2	C	Education of adults	-	
9	2	D	Education of adults, Preply, Berlitz	-	
10	2	E	-	-	
11	3	A	Teaching German and English	-	Irrelevant to the goal of the analysis.
12	3	B	Teaching English and Italian	-	
13	3	C	Teaching German as a foreign or second language	-	
14	3	D	Teaching German as a foreign or second language	-	
15	3	E	Teaching English and Italian	-	

16	4	A	That does not play a role at my school	~~Does not matter at school~~[1]	Cat 4/1: not a topic in class or group settings, for example because there is no practical use for them Cat 4/2: NMT tools are a topic in class and there are rules for using them, but ChatGPT is a more dominant factor in discussions Cat 4/3: use is allowed in specific situations Cat 4/4: plays a role sometimes, for example, in singular situations or when it is helpful Cat 4/5: use is forbidden in certain situations, because learners should be able to
17	4	A	Tablet and beamer are only devices ever used in class	~~Only certain devices used in class~~	
18	4	A	Children use it at home to translate things from their L1 into German	~~Learners use it privately~~	
19	4	A	Parents use it when talking to me about their children	Parents use is in parent-teacher communication	
20	4	A	Have not talked to children about using NMT tools	Not a topic in class	
21	4	A	Know that kids rely on it in their daily life	Aware of necessity in daily life	
22	4	A	Do not know which alternatives to propose, instead of German language class for parents, no quick solution	~~Not able to propose different solution~~	
23	4	B	That does not play a big role	~~Not important at school~~	
24	4	B	Cannot be used during exams anyway	No practical use	
25	4	B	Might play a role for someone doing individual exercises or homework	Might be used individually	
26	4	B	Have not discussed it in former classes	~~Not a topic in class~~	
27	4	B	Do not discuss it currently	~~Not a topic in class~~	
28	4	C	The role they have played in my classes was varyingly strong.	Played a role sometimes	

[1] Text parts in the generalisations section are crossed out when they carry the same meaning as another generalisation, only one generalisation carrying the same meaning is left to be transferred to the reduction section.

29	4	C	In group settings it played hardly any role, at least from my side	Not important in group settings	write or speak independently Cat 4/6: Learners use them or might use them Cat 4/7: For some learners or parents of underage learners they are a necessity in daily life Cat 4/8: NMT tools give learners self-assurance
30	4	C	I am sure some people used it	Learners used it privately	
31	4	C	I did not address it	~~Not a topic in class~~	
32	4	C	I had one situation in private class with a young woman, understanding every single word was important to her, English was the foreign language she was best in, I used Google Translate to prepare myself	Important in singular situation	
33	4	C	In that class it played a big role	~~Important in specific class~~	
34	4	D	I have noticed, these tools are very popular	~~NMT tools are popular~~	
35	4	D	I use them	Using them	
36	4	D	My learners use it	~~Learners use them~~	
37	4	D	Sometimes I have to tell them not to use it now	Forbid in certain situations	
38	4	D	I want so separate phases	Use allowed partly	
39	4	D	With new vocabulary it is helpful	Helpful for certain activities	
40	4	D	English sometimes is not so well known, Google Translate or DeepL are … they give people assurance	NMT tools give learners self-assurance	
41	4	E	NMT tools are a topic that is definitely discussed in class	NMT Tools are topic in class	
42	4	E	Lately, the discussion about ChatGPT is more dominating.	ChatGPT is dominating the discussion	
43	4	E	In my class, there are clear rules for using tools like	There are rules for using NMT	

			Google Translate, DeepL and ChatGPT	tools	
44	4	E	NMT tools are allowed with restrictions	~~Use allowed partly~~	
45	4	E	As a language teacher, I see it as my responsibility to help students learn a foreign language in the best possible way	~~Responsibility for supporting students~~	
46	4	E	I want to motivate them to write texts or sentences themselves and not have a ready-made translation of their thoughts	Motivate learners to write independently	
47	4	E	Students are allowed to use translation tools, mainly in the case of comprehension problems; if an exercise is not clear or if they do not understand a single sentence in a text they are supposed to read	~~Use allowed partly~~	
48	4	E	Or when revising their texts	~~Use allowed partly~~	
49	5	A	-	-	Cat 5/1: NMT tools are interesting for learners because everyone knows about their existence Cat 5/2: There are options for creating exercises incorporating the topic and their outcome could be beneficial to learner
50	5	B	I definitely believe that	~~Yes~~	
51	5	B	I believe it is interesting for pupils because everybody knows it exists	Interesting for learners because everyone knows about their existence	
52	5	B	You can say you write a text like a test or an exam and then they try the instructions, because when you use AI you have to use prompts on how it should write texts and they should do that because there is some different	There are options for creating exercises incorporating the topic	

			outcome every time.		improvement
53	5	B	I think it would be exciting for everyone to see what is entered and what is the outcome, if the text could be handed in the way it comes out and compare it to your writing, what came out, how can you use it to improve yourself	Outcome of the exercises could be used for improvement	Cat 5/3: Forbidding NMT tools makes no sense and there is a need to create possibilities to use them. Cat 5/4: NMT tools are useful in some contexts for example: • For beginners • To countercheck texts • For working on vocabulary • For removing or preventing ambiguity as a teacher Cat 5/5: Overusing NMT tools is not profitable, especially for long-term knowledge. They should
54	5	B	Once someone handed in homework that was entered into Google Translate, it didn't use to be so elaborate, it was recognizable, it was not bad, it was a style different from the pupils', it was in a way that I thought this is Google Translate.	~~Texts translated by NMT tools used to be recognizable.~~	
55	5	B	It used to be recognizable, maybe it has elaborated in a way that you cannot recognize it anymore.	~~Texts translated by NMT tools used to be recognizable~~.	
56	5	C	Yes, it is a good possibility if you create space for its usage	Must create spaces for usage	
57	5	C	To check the text with it	Counterchecking texts	
58	5	C	It is sensible to not forbid it	Forbidding it makes no sense	
59	5	C	You have the possibility, and you make use of it	~~are used because they exist~~	
60	5	C	Try to create space for it and write a text with it	~~Must create spaces for usage~~	
61	5	C	It is very valuable for teaching beginners, it is overextending to not understand something in another	High value for beginners	

			language, then it is positive that these tools exist		not replace skill training. Learners should become independent language users Cat 5/6: Using NMT tools attentively is important. Cat 5/6: Forbidding NMT tools is impossible, the only option is to tell learners not to use them. Cat 5/7: NMT tools are impractical for dialogue exercises Cat 5/8: Due to NMT tools text writing has become an in-class activity
62	5	C	It is useful in certain situations	Sometimes useful	
63	5	C	Connecting and making sense of things should still be trained	Should not replace skill training	
64	5	C	When you use it too much it takes away the brain's work	Overusing is not profitable	
65	5	C	You get nothing out of it in the long run	Not helpful for long-term knowledge	
66	5	D	I use it to acquire vocabulary	Using NMT tools for working on vocabulary	
67	5	D	I use them to remove and prevent ambiguity	Removing and preventing ambiguity	
68	5	D	People are sometimes looking at their phones, I cannot prevent that	Prevention of use impossible	
69	5	D	I can only tell people not to use Google Translate or DeepL in that moment.	Telling learners not to use NMT tools in that moment is the only option.	
70	5	D	The focus is on dialogue exercises and I see that it is not easy to work with Google Translate at the same time, and that is not what I want.	NMT tools are not practical in the context of dialogue exercises	
71	5	D	The teacher in my foreign language trainer class said she is Google Translate in this training setting	~~In class, the teacher takes on the role of NMT tools~~	

72	5	D	People should gain security in speaking without using Google Translate or their smartphone	Learners should become independent language users	
73	5	E	NMT tools can be usefully integrated into class if they help the pupils but don't undertake all their work	~~NMT tools can be helpful in certain situations~~	
74	5	E	My pupils write almost only in class anymore because experience has shown that at home the temptation of using NMT tools is too big	Using NMT tools is a temptation for learners which is why written text production happens mainly in class	
75	5	E	My pupils know I do not find it sensible to have whole sentences translated and present them to me like that as if they wrote them themselves	~~There is no sense in having an NMT tool do the work and present it as one's own~~	
76	5	E	It happens sometimes anyway	~~Sometimes learners have NMT tools to do their tasks~~	
77	5	E	Recently pupils have been allowed to use DeepL Write to revise their texts	~~Learners are allowed to use NMT tools for revising their writing~~	
78	5	E	It is important to me that they leave a note where they used it and add the reason why they like this suggestion better	~~Highlighting parts that were translated by NMT tools and explaining why they are used~~	
79	5	E	It is important that they critically think about the proposed alternatives and justify their decision	Using NMT tools attentively is important	

80	6	A	I use them for languages I do not speak	~~Using NMT tools for unfamiliar languages~~	Cat 6/1: NMT tools are useful for: • Understanding unfamiliar languages • Rechecking translations • Preparing for travelling • Travelling • Gaining information while travelling • Improving learners' language level • Communicating with speakers of a different language • Understanding
81	6	A	To understand them better	To understand unfamiliar languages better	
82	6	A	I consume media in foreign languages and videos, the automatically generated subtitles are bad and not understandable, I put them into some tool if I understand it well enough	~~Using NMT tools to retranslate and understand automatically generated subtitles~~	
83	6	A	On Netflix, if something seems to be strange, I am rechecking it with a translation tool.	Using NMT tools to recheck translations on Netflix	
84	6	A	If I go on holiday in a country in which I don't speak the language I will look up some things and also when I am there.	Using NMT tools to prepare for travelling and in the destination country	
85	6	B	As a teacher, you can use it to improve the language level of the children.	Using NMT to improve learners' language level	
86	6	B	I have never used a tool like that for private matters	No use for NMT in private life	
87	6	B	On holiday I use online dictionaries because I am missing single words	~~Using online dictionaries on holiday~~	
88	6	B	I never use it for a whole conversation	~~Never use online dictionaries for complete conversation~~	
89	6	B	It is said that these tools can recognize languages, you say	Using the voice recognition and	

			something, and they translate it into Japanese and I can talk to someone Japanese who says something in Japanese and the tool tells me that in German this would be an advantage in the future	speaking function of NMT tools is advantageous on holiday to talk to speakers of other languages	languages easily • Translation • Reducing shyness • Rechecking writing • Time management • Motivating learners • Writing texts • Obtaining multiple translation suggestions Cat 6/2: There is no use for NMT tools in private life Cat 6/3: There is a difference between using NMT tools in private and when learning a language Cat 6/4: Using NMT in situations that do not require high accuracy
90	6	B	Not for language learners but for travellers		
91	6	B	Also used Google Translate during my South America holiday, entered something and showed the bus driver, think he knew what I meant	Using NMT to gain information while travelling	
92	6	B	It is different writing your homework with it or using it for a question about bus stops	There is a difference between using NMT tools in private and when learning a language	
93	6	B	It does not have to be 100% right because if it is in German with grammar mistakes, I still understand it	Using NMT only in situations that do not require high accuracy	
94	6	B	It is useful for travellers who do not speak the language	~~NMT tools are useful for travelling~~	
95	6	C	You can apprehend a different language easily	Makes understanding a language easy	
96	6	C	The translations are already well done	Works well for translation	
97	6	C	Being shy in a different language can be reduced	Reduces shyness in new language	
98	6	C	You can check your own text for mistakes or difficulties	Use it to recheck writing	

99	6	D	-	-	
100	6	E	Help saving time	Beneficial to time management	
101	6	E	Make it possible to orient oneself in countries where you do not speak the language	~~Guiding in countries with a foreign language~~	
102	6	E	Pupils find it motivating to be allowed to use these tools and when tey are not strictly forbidden	Allowing NMT tools is motivating for learners	
103	7	A	It is difficult to translate complex sentences, the tools do not know all about grammar and language structure, sensibly translating a whole sentence is a limit	Using NMT tools for translating complex content does not work well	Cat 7/1: NMT tools cannot be used: • For translating complex content • In the context of exams • In the context of oral text production Cat 7/2: NMT tools should not be used: • When a learning effect is required • in situations that can lead to
104	7	A	It should not be used in official contexts, if there are misunderstandings among politicians can end badly, also in private but only a single person will suffer the consequences, and not a whole collective of people	~~NMT tools should not be used in political settings that can lead to extensive consequences~~	
105	7	B	Should not be used as a tool for homework, there is no learning effect	Should not be used when a learning effect is the objective	
106	7	B	At the Matura or an in-class exam you cannot deliver, oral text production does not work	No use for exams and oral text production	
107	7	C	The setting in class should encourage you to speak and write in a foreign language, the danger of these tools is that you rely on them too much	Overusing NMT tools entails failing the objective of language learning	
108	7	C	You always want to use it to check stuff and do not allow	Overusing disturbs error culture	

			yourself to make mistakes.		extensive consequences
109	7	C	It is not good to use machine translation in communication that involves sensitive content, in the medical field, wherever mistakes in communication have a big impact	NMT tools should not be used in settings that can lead to extensive consequences	Cat 7/3: Overusing NMT tools: • Leads to failing the objective of language learning • Disturbs error culture Cat 7/4: Ambiguity poses a problem
110	7	C	When you go on holiday it is better to learn the language of the country and not rely totally on that.	~~Relying too much on NMT tools while travelling is inadequate~~	
111	7	D	They should give people security, it is one of the hardest things to learn a language, and any means of help is right	~~NMT tools give learners a feeling of security~~	
112	7	D	The line is speaking freely	~~Speaking freely cannot be achieved with NMT tools~~	
113	7	D	I do not have a problem with someone formulating a letter, that search for aid when it is about official things	Using NMT tools for writing is appropriate → Cat 6/1	
114	7	E	Translation tools deliver verbatim translations	~~NMT tools deliver verbatim translations~~	
115	7	E	They cannot consider the context	~~Are unable to consider the context~~	
116	7	E	Ambiguity can pose a problem	Ambiguity poses a problem	
117	8	A	See question 6	In → Cat 6/1	Cat 8/1: Not using NMT tools in a private context Cat 8/2: Using NMT tools for fun
118	8	B	No	Not using NMT tools privately	
119	8	C	used it once for creating a quiz and for translating the song text we used Google Translate	Used NMT tools for fun	

120	8	C	We used it for a game, Connections	~~Used NMT tools for fun~~	Cat 8/3: Using NMT tools for fun is different from using it in serious situations Cat 8/4: Using NMT tools while travelling Cat 8/5: Using NMT tools if there is no other option
121	8	C	That is something different	Using NMT tools for fun is different from using it in serious situations	
122	8	C	I found it great to get more than one suggestion	Multiple suggestions are an advantage of NMT tools → Cat 6/1	
123	8	D	I mainly use it in a professional context	~~Using NMT in a professional context~~	
124	8	D	I hardly ever use it in private matters because I live in Graz and doing well with German.	~~Unnecessary in private context~~	
125	8	E	I am not dependent on using translation tools	~~not depending on NMT tools~~	
126	8	E	I use Google Translate on holidays at the utmost	Rarely using NMT tools while travelling	
127	8	E	When I do not know the local language at all and want to understand something desperately	Using NMT tools only if there is no other option	
128	9	A	There are two sides of the same coin	There are two sides to using NMT tools	Cat 9/1: There are two sides to using NMT tools Cat 9/2: How NMT tools are used defines their usefulness
129	9	A	It depends on how, in which context, how often and what you use it for.	How NMT tools are used defines their usefulness	
130	9	B	If someone uses it intelligently, it can be a support.	Using NMT tools/AI	

				intelligently poses support	Cat 9/3: Using NMT tools/AI intelligently poses support Cat 9/4: are not to be deemed as generally bad Cat 9/5: NMT does not replace human thinking Cat 9/6: Tools that ease understanding are to be seen positively Cat 9/7: NMT tools will not become more intelligent than we are Cat 9/8: NMT tools taking over the human ability to think is an aspect to be taken into consideration Cat 9/9: NMT tools are an aid Cat 9/10: Care is required when using NMT tools
131	9	B	I would not condemn it by default	It is not to be deemed as generally bad	
132	9	B	I would not say that it takes away people's thinking	NMT does not replace human thinking	
133	9	B	I think like with everything in life there are advantages and disadvantages and when you use it intelligently, it can have more advantages than disadvantages	~~There are two sides to using NMT/AI tools~~ ~~Using NMT tools/AI intelligently is rather advantageous~~	
134	9	C	I would look at it positively	~~Look at NMT tools positively~~	
135	9	C	I think things that make understanding languages, and cultures more understandable are to be seen positively	Tools that ease understanding are to be seen positively	
136	9	C	I do not think that this is something that outgrows us and is nothing that thinks further than we do	NMT tools will not become more intelligent than we are	
137	9	D	Am trying to strike a compromise	~~There are two sides to using NMT tools~~	
138	9	D	This critique has a point when I think about my classes	NMT tools taking over the human ability to think is an aspect to be taken into consideration	

139	9	D	You have to see to it that everything is not too easy, the learners should gain self-consciousness so they can really use the language, so, it is the one and the other	~~The main aim is to provide learners with self-consciousness in the target language so they can use it.~~ ~~There are two sides to using NMT tools~~	Cat 9/11: NMT tools are not a threat
140	9	D	It is an aid	NMT tools are an aid	
141	9	D	You have to watch out to not only rely on that	Care is required when using NMT tools	
142	9	D	You have to lead the people to using the language autonomously	~~The goal of language education is to lead learners to use the language independently~~	
143	9	E	Threat is a word too strong in this context	NMT tools are not a threat	
144	9	E	NMT tools are an aid in everyday life	~~NMT tools are an aid~~	
145	9	E	I do not want to have to rely completely on translation tools	~~NMT tools are not to be relied on completely~~	
146	10	A	That I cannot imagine, at least in the coming years	Language classes will not be substituted by new technologies	Cat 10/1: Language class will not be substituted by new technologies Cat 10/2: Many aspects in language education cannot
147	10	A	There are too many things in language class that cannot be replaced by AI, where human intelligence is necessary because it is not just about learning languages	Many aspects in language education cannot be replaced by AI	

				Learning a language is just one of the parts of language education	be replaced by AI Cat 10/3: Learning a language is just one of the parts of language education. Other parts are: • Cultures • Interhuman relations Cat 10/4: Learning with online tools is a great possibility Cat 10/5: Individually customised language teaching is different from online language learning Cat 10/6: It cannot be known for sure that language class cannot be replaced, only time will tell Cat 10/7:
148	10	A	It is about the imparting of cultures and communication between humans and not only between humans and AI	Language education is about cultures and interhuman relations	
149	10	A	In language class, I see a lot of humanness that is essential.	~~Interhuman relations are vital for language education~~	
150	A	10	That is why I do not believe that tools like that will exterminate language classes, at least I hope so.	~~NMT tools will not substitute language classes~~	
151	B	10	I do not think so	~~NMT tools will not substitute language classes~~	
152	B	10	I have heard it often and find it great that it is possible to learn from that	Learning with online tools is a great possibility	
153	B	10	That can never replace real human contact	~~Interhuman relations are vital for language education~~	
154	B	10	Maybe I can be a decent translator with these tools	~~Using NMT tools as a translator can work~~	
155	B	10	Communication always is a reaction and AI has not yet come that far	~~Communication depends on reaction AI is not capable of.~~	
156	B	10	I often get the feedback from personal training or tutoring,	Individually customised	

			that it is different if someone focuses on you, different from learning something on the internet	language teaching is different from online language learning	Language teaching might change its form Cat 10/8: Language teachers can be replaced by AI
157	B	10	It can work and can be an aid but replacing I do not think so	~~NMT tools can be helpful but cannot replace language class~~	
158	B	10	I never thought that Corona would make it possible for us to teach online, so I guess I'll have to wait and see	It cannot be known for sure that language class cannot be replaced, only time will tell	
159	C	10	I do not think so	~~NMT tools will not substitute language class~~	
160	C	10	It would be very sad because language class does much more than introduce the language	~~Language education provides learners with more than learning a language~~	
161	C	10	I do not think that technical tools can replace learning	~~NMT tools will not substitute language class~~	
162	D	10	It is not impossible that language teaching in this form will disappear	Language teaching might change its form	
163	D	10	I see that there is a demand for conversation	~~There is a demand for interhuman relations in language learning~~	
164	D	10	People want to train their German with a native speaker or someone who speaks the language regularly	~~There is a demand for interhuman relations in language~~	

				~~learning~~	
165	D	10	It is possible to replace everything with AI, maybe we have a few years or decades left	Language teachers can be replaced by AI	
166	E	10	No, I do not think so	~~New technologies will not substitute language class~~	
167	E	10	There are enough people who enjoy learning a foreign language	~~Learning languages is a hobby for some~~	
168	E	10	Or to whom it is important to master a language	~~Mastering a language is the goal of some learners~~	
169	A	11	Getting to know different cultures, all cultures and people are equal, no language or culture is better than any other	Cultural knowledge, and equality are a part of language education	Cat 11/1: Competences and values that are imparted through language education are: • Cultural knowledge • Equality • Anti-racism • Solidarity among people • Interpersonal
170	A	11	It is about anti-racism work	Anti-racism is a part of language education	
171	A	11	It is about solidarity among people no matter where they come from	Solidarity among people is a part of language education	
172	B	11	Regional studies, cultural knowledge about countries that speak the target language	~~Country-specific knowledge and cultural knowledge~~	
173	B	11	Interpersonal things, in Italian class a lot of gesticulation with hands, no app or AI can explain this to you because in Italy if you make the appropriate hand gestures you	Interpersonal relations are a part of language education, AI is not capable of transmitting them	

			understand each other without the right words		relations
174	B	11	Another competence we train extensively is reading texts fast, the competence to understanding what the text is about not every single word and am I able to summarize it?	Apprehending the contents of text quickly is a skill taught in language class	• Apprehending texts quickly • Country-specific knowledge • Handling day-to-day life • Non-verbal competences • Language-specific knowledge • Self-awareness in a language • Knowledge about the language area • Intercultural competences • Critical thinking Cat 11/2: AI is not capable of transmitting
175	C	11	Knowledge about how life works in Austria	Country-specific knowledge	
176	C	11	Also about everyday life	Handling day-to-day life	
177	C	11	Everyday reality, in a setting in class they can ask everything they find interesting about life and everyday life	~~Day-to-day life~~	
178	C	11	Peculiarities of Austrians if you can say it that sweepingly	~~Country-specific knowledge and cultural knowledge~~	
179	C	11	I find that very important	~~important~~	
180	C	11	Non-verbal competencies that you need	Non-verbal competences	
181	C	11	Peculiarities of the language	Language-specific knowledge	
182	D	11	Students should develop a self-awareness of the German language, so they can communicate in German	Self-awareness in the language	
183	D	11	They should be able to find their way in the Germanophone language area	Knowledge about the language area	
184	D	11	It is also a bit about culture, the specialities in the German language area	~~Cultural knowledge, knowledge about the language area~~	

185	E	11	I am thinking of social competencies	~~Interhuman relations~~	interpersonal relations
186	E	11	Intercultural competences	Intercultural competences	
187	E	11	Critical thinking	Critical thinking	
188	A	12	No, I do not think so	Successful communication cannot take place without additional competencies	Cat 12/1: Successful communication cannot take place without additional competences Cat 12/2: Business communication might work without additional competences Cat 12/3: Face-to-face communication cannot take place without additional competences Cat 12/4: Nonverbal skills are important for interhuman relations Cat 12/5: Language education can happen online but not without
189	B	12	I do not think so	~~Successful communication cannot take place without additional competencies~~	
190	B	12	A sole business competence of course works as well only per e-mail, I can use translation tools well	Business communication might work without additional competencies	
191	B	12	I do not think so in the case of face-to-face communication	Face-to-face communication cannot take place without additional competencies	
192	B	12	I do not know the certain vocabulary in Italian, I was asked by someone working at a refuse incinerator who said I should help him, no idea about this vocabulary but I have the basis for Italian, if you build on that a tool can write the basic text and I can say okay that is correct	~~NMT tools can be helpful for specific tasks if the output is checked~~	
193	C	12	No, I do not think so, because communication is always	~~Successful communication~~	

			more than translating word for word	~~cannot take place without additional competencies~~ ~~Communication is more than words~~	direct communication Cat 12/6: Language learning without a teacher is very hard
194	C	12	Nonverbal skills always play a role	Nonverbal skills are important	Cat 12/7: Making mistakes and correcting them is essential to language learning, but not a part of machine translation Cat 12/8: Learning a language without interhuman relations is possible. It is difficult but feasible Cat 12/9: Communication can be partly successful without additional competences Cat 12/10: Communication without additional competencies will be
195	C	12	That is why it is important to communicate with people and learn languages	Interhuman relations in language learning are important to that end	
196	C	12	A friend is taking an online English class, and it is only online without direct communication per video or anything	~~Some learners take online classes without teachers~~	
197	C	12	It can be online but with a person to communicate	Language education can happen online but not without direct communication	
198	C	12	I cannot imagine it and it shows that it is very hard	Language learning without a teacher is very hard	
199	C	12	Mistakes may happen in a dialogue that you can maybe correct while speaking or not but I find it important to convey that mistakes can happen and also happen to native speakers and this is something that is also missing with machine translation	Making mistakes and correcting them is essential to language learning, which is not a part of machine translation ~~Native speakers also make mistakes~~	

200	D	12	It is more difficult	~~Communication without additional competencies is harder~~	shallow
201	D	12	If you buy a book or with online classes and do it right	Learning a language without interhuman relations is possible	
202	D	12	I think in school we did that that, compiling everything ourselves, the language, it is difficult	~~From experience, learning a language on your own is difficult~~	
203	D	12	I find it to be difficult, yes, but I think it is feasible	It is difficult but feasible	
204	E	12	Probably in part	Communication can be partly successful without additional competencies	
205	E	12	The communication would be shallow and without interhuman relations without the aforementioned competences	Communication without additional competencies will be shallow	
206	A	13	You can always change or improve something	Change and improvement of language education is always a possibility	Cat 13/1: Change and improvement of language education is always a possibility Cat 13/2: There is room for improvement
207	A	13	CLIL* was the hype when I was studying ** Content and language-integrated learning*	~~Content and language-integrated learning was an important part of language teacher training~~	

208	A	13	Not learning grammar for the sake of grammar, putting it into context, reading a story for example and learning the grammar as a part of that	~~Putting grammar into a context is part of CLIL~~	Cat 13/3: Implementing CLIL everywhere is a step to be taken
209	A	13	In many Austrian classrooms, this happens very differently de facto	~~CLIL is not implemented in every classroom~~	Cat 13/4: There is not enough time to teach languages properly
210	A	13	There is a lot of room for improvement	There is room for improvement	
211	A	13	This is something to work on, that these things are put into praxis everywhere	Implementing CLIL everywhere is a step to be taken	Cat 13/5: The whole school system has to change
212	B	13	In school, there was not enough time and at this time, everything was too compressed	There is not enough time to teach languages properly	Cat 13/6: There is a lack of contact with native speakers
213	B	13	Not only Italian or English is a subject but others as well	~~There are other subjects~~	
214	B	13	Not language class has to change but the whole school system has to be changed	The whole school system has to change	Cat 13/7: Language class design should be more open
215	B	13	In language class, it would be great if you could always speak to a native speaker	There is a lack of contact with native speakers	
216	B	13	It would be great to focus more on speaking	~~The focus has to shift to speaking~~	Cat 13/8: There is no comprehensive answer
217	B	13	At the Humboldt school, I am freer in the design, I cannot do that in a normal language class	Language class design should be more open	Cat 13/9: Language education does not have to change
218	B	13	It is a hard-to-answer question and I cannot give the one answer	There is no comprehensive answer	Cat 13/10: Error culture

218	C	13	I always was relatively free, I gave classes sponsored by the state, you are kind of restricted but relatively free in lesson design, and you can create more space for questions appearing in daily life	~~When language classes can be designed freely, space for appearing questions can be created~~	should be maintained Cat 13/11: The focus should shift to speaking and listening Cat 13/12: Writing can be outsourced to NMT tools Cat 13/13: For a higher level speaking and listening are not enough Cat 13/14: Language education has to adjust to the new reality of life Cat 13/15: Evaluation and grading will have to shift the focus to the text production process
219	C	13	You can go outside, out of the classroom and learn in the open	~~There are different options for teaching~~	
220	C	13	I do not think that language education has to change	Language education does not have to change	
221	C	13	Being tolerant towards mistakes or positive dealing with mistakes would be important, but I think this view has spread over time	Error culture should be maintained	
222	C	13	I do not think that something has to be changed in language education in general.	~~Language education does not have to change~~	
223	D	13	This is a bit difficult for me because I am at the beginning of my teaching career	~~It is hard to say~~	
224	D	13	The Berlitz method steps a bit away from the grammar topic	~~Grammar is put into context~~	
225	D	13	I cannot compare in this topic	~~There is no comprehensive answer~~	
226	D	13	Maybe focus more on dialogue and speaking and of course listening	The focus should shift to speaking and listening	

227	D	13	For writing it sometimes works relatively well to outsource this to translation programs only if you can speak and understand	Writing can be outsourced to NMT tools	
228	D	13	For a higher level, it takes more	For a higher level speaking and listening are not enough	
229	E	13	I think language education will have to adjust to the new reality of life	Language education has to adjust to the new reality of life	
230	E	13	Evaluating and grading pupils' exercises will take the product less into account but focus on the writing process, the planning, the draft, and the revision of a text.	Evaluation and grading will have to shift the focus to the text production process	
231	E	13	This is something that I would welcome anyway	~~It is a welcome change~~	
232	A	14	I have never used ChatGPT because I see only disadvantages for me in it	No use for generative AI, there are only disadvantages	Cat 14/1: Teachers do not use generative AI because: • there are only disadvantages • there is no need in a professional or personal context • NMT tools are sufficient
233	B	14	I used it once out of curiosity about how it would work	Testing generative AI out of curiosity	
234	B	14	I do not use it regularly because I do not need it at work or in private life	Not using generative AI regularly, no need in a professional or personal context	
235	B	14	I can imagine using it in the future but not now	Maybe using it in the future	
236	B	14	I do have no use for it at the moment	~~No current need~~	
237	C	14	I do not use it because I have not yet used the tools at all	Never used generative AI	

238	C	14	I do not have any experience in using these tools because I have never used it	~~Never used generative AI~~	• Using NMT tools takes fewer steps Cat 14/2: Teachers use generative AI out of curiosity Cat 14/3: Teachers can imagine using AI in the future
239	D	14	I do not use ChatGPT	~~Not using generative AI~~	
240	D	14	I have not yet found it necessary, DeepL and Google Translate provided satisfying experiences	Not necessary, NMT tools are sufficient	
241	E	14	No, I do not use it because it was not necessary up to now.	~~No current need~~	
242	E	14	I can imagine using the translation function if I need it in the future	~~Maybe using it in the future~~	
243	E	14	Probably I would rather use Google Translate because you have to first log into ChatGPT.	Using NMT tools takes fewer steps	

9.4 Abstract

9.4.1 English

Neural Machine Translation (NMT) tools have found their way into everyday life as well as into language teaching and learning. The research on NMT and language learning has increased in recent years, yet research concerning NMT and learning languages in Austria has not been widely conducted, if ever. Altogether, comparatively little attention has been given to what foreign language teachers think about NMT tools, especially in German-speaking countries and since the introduction of freely accessible online NMT. Therefore, the aim of this master's thesis is to gain insight into current attitudes towards NMT tools among foreign language teachers in Austria, and finding out if and how this topic is treated in class, as well as exploring whether foreign language teachers in Austria use NMT tools privately and, if so, what for. Interviews with five foreign language teachers and an online survey with 34 participants were conducted. The interviews were analysed using Mayring's Qualitative Content Analysis and the survey was analysed automatically. The findings of both are presented and discussed separately, and later compared. It was found that attitudes towards NMT tools among the participating teachers in Austria are of a mixed nature but point to a positive direction. Further NMT tools are sometimes actively introduced and used in class, but more often not. If NMT tools are a topic in class, the teachers use them mostly for vocabulary exercises and text production, reading and writing tasks. Finally, many of the foreign language teachers participating in the interviews and survey do use NMT tools privately, however, mostly in a low-stakes context. The findings imply that integrating NMT tools into language teaching and language teacher education might be beneficial.

9.4.2 German

Neuronale maschinelle Übersetzungstools (NMT-Tools) sind im Alltag, im Sprachenunterricht und im Sprachenlernen angekommen. Die Forschung zu NMT im Zusammenhang mit dem Sprachenlernen hat in den letzten Jahren zugenommen. In Österreich wurde diesbezüglich nicht geforscht. Allgemein wurde in der Forschung zu diesem Thema eher wenig Aufmerksamkeit auf die Meinung von Sprachenlehrenden gerichtet, insbesondere nicht im deutschsprachigen Raum seit der Einführung von online frei zugänglicher NMT. Daher ist das Ziel dieser Masterarbeit einen Einblick in die gegenwärtigen Einstellungen Fremdsprachenlehrender in Österreich zum Thema NMT-Tools zu bekommen. Weiters soll

herausgefunden werden ob und wie dieses Thema im Sprachenunterricht behandelt wird und ob und wofür Fremdsprachenlehrende NMT-Tools privat nutzen. Es wurden fünf Interviews mit Fremdsprachenlehrenden geführt, ebenso wurde eine Online-Umfrage durchgeführt an der 34 Personen teilgenommen haben. Die Interviews wurden anhand der Qualitativen Inhaltsanalyse nach Mayring analysiert. Die Online-Umfrage wurde automatisch analysiert. Die Erkenntnisse werden separat präsentiert und diskutiert, bevor sie in einem weiteren Schritt verglichen werden. Es konnte herausgefunden werden, dass die Einstellungen der teilnehmenden Lehrenden in Österreich zu NMT-Tools gemischter Natur sind, aber in eine positive Richtung gehen. NMT-Tools werden teilweise aktiv in den Unterricht integriert, meistens ist das aber nicht der Fall. Wenn NMT-Tools ein Thema im Unterricht sind, werden sie meist für Vokabel und Textproduktion eingesetzt, für Lese- und Schreibübungen. Viele der an den Interviews und der Umfrage teilnehmenden Lehrenden verwenden NMT-Tools privat, jedoch meistens in einem Kontext niedriger Ansprüche. Die Erkenntnisse implizieren, dass es vorteilhaft sein könnte NMT-Tools sowohl in den Sprachenunterricht als auch in die Lehrenden-Ausbildung zu integrieren.