

Dictionary or Translator?

University Students' Machine Translation Use, MT Literacy and Perceptions of the Technology

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Master's Thesis

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This thesis explores students' use of machine translation (MT), their attitudes and perceptions regarding the technology and different aspects of their MT literacy. These features are examined through data gathered in a survey given to a total of 111 Finnish university students, in three different groups, throughout the span of two years. The purpose of the survey is to ask students questions regarding the extent of their MT use, their use purposes in both academic and non-academic environments, as well as their thoughts regarding the usefulness, accuracy, strengths, weaknesses and suitable applications of the technology. The responses gathered are analysed both quantitatively and qualitatively, presenting both exact statistics and also showcasing emerging trends and popularly discussed themes.

Survey results indicate widespread use of MT by students, primarily as an alternative for online dictionaries. MT is also used to translate shorter text segments in order to create rough drafts for students' own translations, as well as translating foreign language texts to better understand them. Only a very small minority of students use MT more extensively, translating entire source texts, which they then post-edit. Students rate the accuracy of MT relatively low at 4.6/10 and usefulness slightly higher at 6.2/10, finding the technology usable and convenient despite its many issues. Most students have the ability to think critically about the weaknesses and strengths of MT, as well as identify suitable and unsuitable applications for it, exhibiting a moderate level of MT literacy. Some, however, tend to misunderstand the more technical (and sometimes even basic) functions of MT systems, mistakenly equating MT tools with other CAT tools and generative AI.

The results found in this study offer valuable information regarding students MT use and literacy from the students' own perspective, helping bring their MT use and opinions to the light. However, in order to gain a fuller picture of students' skills and possible knowledge gaps in their MT literacy, further research comparing the survey results with students' performance in practical tasks is recommended.

Key words: machine translation, student machine translation use, machine translation literacy, translation education, translator training

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1 Introduction

In the autumn of 2022, I was in the middle of my internship, working as a course assistant for a beginner level translation course at the University of Turku. As one part of my duties, I had the opportunity to design a self-reflection questionnaire for the students. Among many other things, I gathered data on their thoughts about translation, what they find interesting or challenging about the process, and what sort of tools they use when completing their assignments. After analysing the first set of results, I was surprised to see that 47.4% of the students reported using machine translation (MT) in their assignments (Vainio 2024, 9). To me, knowing that the majority of these students had very little education related to machine translation and its various pitfalls so far in their studies, the number appeared rather high.

This initial questionnaire, however, was not designed with more detailed MT questions in mind. As such, it did not yet reveal, apart from a few cases, what reasons and purposes students used machine translation for. Whether MT technology serves more as something akin to a dictionary alternative or, at worst, a way of translating entire source texts with little editing afterwards can make a big difference in how concerned we should be over its widespread use in the hands of beginner translation and language students. Subsequently, this also affects how we should approach possible alterations to beginner level translation education. More research on these topics, especially on details pertaining to students' exact MT use, is still needed in our field (Man et al. 2020, 257).

Generative AI and machine translation have undeniably become a fixed part of academic life. In the current job market, having the ability to efficiently utilise different forms of language technology as part of one's workflow is a trump card in any translator's pocket – if not already a necessity (Mellinger 2017). While many professionals are likely aware of both the technology's pros and cons, beginner translator and language students may not possess the same level of machine translation literacy. This is especially true if machine translation-related teaching remains largely secluded in its own specialised courses, instead of becoming integrated more largely as part of the curriculum starting from the beginner level.

However, in order to make efficient improvements in translation education, it is first important to map out the needs for such changes from a student perspective. As such, in this thesis I now aim to examine the extent of students' machine translation use in tandem with the motivations for using said technology in their academic work and free time. In addition, I will

explore students' personal attitudes and perceptions regarding MT technology, its usefulness, accuracy and suitability for different purposes. My wish is to discover how aware of MT technology's strengths and weaknesses the students are and whether their attitudes and their ability to recognise MT-related issues may have a correlation. This, in turn, will hopefully serve as the first step in helping concretise needs for adjustments or additions in future translator training and, ultimately, argue for the benefits of more extensive MT-related education for translator and language students starting from the beginner level.

Keeping in mind these goals, the research questions for this thesis are the following:

- 1. On average, what percentage of students attending a beginner level translation course use machine translation in their translation assignments?**
- 2. In what ways and for what purposes do these students use machine translation?**
- 3. What kind of perceptions and attitudes do students have regarding machine translation programs as well as their strengths and weaknesses?**

Finding answers to these questions will help open possibilities for further research and provide a starting point for more student-centred discussion in the field of translation didactics.

Following this introduction, I will first provide some general information on MT systems and their characteristics, then take a look at trends in the current translation job market, examine characteristics of translation technology training in a European context, as well as define MT literacy and skills related to it. In addition, I will briefly discuss some previous studies on the topic of student MT use. After this overview, I will lay out further information on the context of my study, its participants and the methods used during the gathering of data for this research, as well as in its analysis. This will be followed by both a quantitative and qualitative analysis of student responses and a discussion of results. Lastly, I will draw conclusions based on the results of the analysis and reflect on future research prospects.

2 Theory and background

In this section I will first define what is meant by “machine translation” in this thesis, the basics of how neural machine translation (NMT) systems work, as well as what their strengths and possible weaknesses are. Followed by this introduction to NMT, a brief overview of the current state of translation education and the translation job market, in relation to translation technology, will be provided. Finally, I will take a look at previous studies conducted on MT use and perceptions.

2.1 Defining machine translation

2.1.1 The building blocks of a neural machine translation system

Machine translation, as defined by Garg and Agarwal, refers to the “processing of natural language [...] that aims to automatically translate text from one language to another using a computing device” (2018, 1). In this thesis, the term *machine translation* is used more specifically to refer to the currently most widely used MT models, i.e. neural machine translation (NMT) systems, such as *Google Translate* or *DeepL*. Regardless of being a rather recent innovation that began its rapid development in the mid-2010s, NMT has swiftly improved in its accuracy and fluency over the past decade, widely replacing previously dominant rule-based and statistical models (Briggs 2018, 5). From this point on, the terms *machine translation* and *neural machine translation* will be used interchangeably in this thesis.

Neural machine translation systems are built on multi-layered, network-based language models, of which a majority are made up of a similar four-part structure, consisting of the embedding layers, encoding and decoding layers, and a classification layer (Tan et al. 2020, 6). To put it simply, an NMT model sequences the given source language input and encodes it into a numerical vector, which is then used to calculate the most probable target language matches (Bahdanau, Cho, and Bengio 2016, 1–3). In the process, the NMT model tries to predict the word(s), preceding and following the created vectors, thus taking into consideration the larger context of the translated sequence (ibid.). Depending on the depth of the network (i.e. the number of layers within it), these vectorisations may be repeated hundreds or even thousands of times, comparing different possibilities and thus, ideally, improving the translation’s accuracy with each iteration. Finally, once the calculations are complete, the system decodes the numerical values back into language, thus forming the target translation (Bahdanau, Cho, and Bengio

2016, 1). In order to do all this, an NMT must first be trained using massive datasets consisting of matching pairs of source texts and translations made by humans (Briggs 2018, 95–96).

2.1.2 NMT strengths and weaknesses

The accuracy and usefulness of an MT system rely heavily on the datasets it has been trained on. NMTs work best with language pairs that are frequently translated back and forth, and ones where a large number of parallel texts and translations are available (Bowker 2023, 98). Naturally, an NMT with only access to translations from Chinese texts into English during training will not provide successful translations from Swedish to German. Same can apply to text types and register. If the intention is to translate highly structured legal texts, results will be better if many of these have been present in training.

Similarly, the quality of the training data is reflected in the future translations: any errors and biases are likely to be replicated in new translations (Bowker 2023, 100–101). These issues may range from simple typos to more covert social biases. A common example is the prevalent gender bias found especially when translating sentences featuring certain occupational titles (Savoldi et al. 2021). For example, pronouns attached to a title such as *nurse* or *cleaner* are in most cases primarily translated by MTs as feminine ones, and occupations such as *mechanic* or *police officer* are paired with masculine pronouns. This is the case even when the source expression is not gender-marked, thus replicating real world stereotypes present in the training data (ibid.).

Creative, complicated or stylistically unconventional texts continue to prove themselves challenging for MT systems. Although NMTs have improved in quality of humanlike and “creative” translation compared previous rule-based or statistical models (Toral and Way 2018, 22), they still have a long way to go in order to be on par with human translation, especially in translation of literary texts (Corpas Pastor and Noriega-Santíañez 2024, 2–4 & 12–15). A neural network may be inspired by the functions of a brain, but it cannot in reality *think* like a human translator, only calculate and predict. As such, any subtle nuances, humour, puns and culture bound elements are obstacles that often cause MT to stumble. Ambiguity too is one of MT’s greatest enemies. If a word or expression has multiple meanings, an MT system will likely opt for the most common alternative, which may often not apply to the current text. Furthermore, taking into consideration the commission, the target audience, possible stylistic requests,

localisation needs or other specifications and restrictions are not yet built-in features of NMT systems.

Despite the many possible pitfalls, MT also comes with many undeniable benefits and strengths. NMTs are quick, easy to access, reasonably accurate and for the most part: free. Systems such as *Google Translate* or *DeepL* can be easily accessed by anyone anywhere with a smart device and an internet connection and intuitively used even by people with no translation experience or background. For language learners or students, an MT program or app can be used as a dictionary alternative and for any non-native speaker it may enable at least somewhat sufficient cross-language communication in the absence of a human interpreter. MT works well for “gist” translation (i.e. getting the general idea of what is going on in a text the user does not otherwise understand) and it does so instantly and free of charge, giving people access to various types of texts that would otherwise be locked behind a language barrier. From a professional point of view, using MT to assist in the translation process can also help save precious time —at times by even replacing a first draft— when a translator is juggling multiple projects at once.

As a recent development, there is an emerging possibility of using artificial intelligence as scaffolding for some of the previously mentioned pitfalls, with a user engaging in a form of translation in collaboration with generative AI-systems such as *ChatGPT*. The interactive nature of AI may provide an opportunity to state a commission to the MT system and adjust its output with different requests regarding, for example, style or terminology. As pointed out in my analysis later on, a small but growing trend of AI use and a tendency to link AI together with MT is visible among students, which may help mitigate some of the challenges and risks of current NMT use but also cause confusion regarding exact definitions of MT. In any case, the fact remains that human intervention and post-editing are still needed in tandem with MT use, as these systems do not yet work fully automated – and may never be able to.

2.2 Translation technology on the job market and as a part of education

The European Union’s 2024 European Language Industry Survey, reported AI and MT being among the top three emerging market trends identified across all interest groups working in the field of translation (ELIS Research 2024, 23). In 2025, the next iteration of the survey once more identified the same trends and found that more than a half of professional translators now

use AI and MT in their daily lives, revealing that the trend of technologization is continuing to grow (ELIS Research 2025, 34).

Following the increasing presence of AI technologies in the industry and the growing number of post-editing commissions, many professionals express concerns over receiving proper remuneration for their work (ELIS Research 2024, 4). While translators' are no longer as concerned about various translation technologies completely replacing them and voiding human translator work in its entirety, as once was the case, changes in types of work received and the subsequent decrease in pay are their greatest worry (Saloniemi and Saari 2022, 289).

Heavily technology driven work appears to be here to stay, and thus, any translation company, language service provider or freelancer in the field willing to compete on the market will want to offer technology and post-editing related services, as clients increasingly often come in already 'one step into the process', providing machine-translated texts they wish to have checked and corrected. Increased technologization and digitalisation brings with it new opportunities for specialisation, shifting expertise more heavily towards translation technology use and requiring translators to adapt their skill sets to fit new market needs, even when the results may somewhat paradoxically lead to lower pay, tougher competition and less appreciation for the work translators do (Saloniemi and Saari 2022, 289–96).

Noting all these aspects, educating students on translation technology is not only important from an ethical point of view, but also when it comes to preparing them for working in the increasingly competitive field of translation services. Following the need to adapt to these ever more technology-driven workflows and to garner related expertise, MT and translation technology (TT) in general have become important aspects of translation education curriculums. Yet, TT training still often remains isolated in specific technology-focused units instead of being seamlessly blended into more practical translation courses (Sánchez-Castany 2023, 481–82). However, in recent years, more and more attention has been paid to this fact on a theoretical level. Many researchers (e.g. Mellinger 2017; Pastor 2021; Esqueda 2021; Sánchez-Castany 2023; Öner Bulut and Alimen 2023) in the field of translation studies have called attention to the importance of further including technology-related training in preparing translation students for their future careers.

In a European context, which is also the backdrop for this study, trends in translation education are largely inspired and steered by influences from the European Union. Many universities aspire to have their translation degree programmes accepted into the European Master's in Translation (EMT) network. In the 2024–2029 EMT term, 81 programmes from 79

universities across 23 European countries were accepted as members (European Commission 2024).

The EMT sets quality standards for translator training with its competence framework. *Competence*, as defined by the framework, refers to a “the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development” (EMT 2022, 3). EMT identifies five such areas of competence: language and culture, translation, technology, personal and interpersonal, and service provision (EMT 2022, 4). A key requisite for membership in the EMT network is that the applicant university must offer training that ensures the acquisition of all five competences during the MA degree programme.

The depth and detail of training may still vary between degree programmes. In terms of the technology competence, the standard set by the EMT is that a translation degree programme should provide students with the ability to use both current and upcoming translation-related technologies, as well as ensure that they have at least “basic knowledge of machine translation technologies and the ability to implement [them] according to potential needs” (EMT 2022, 9). While MT is highlighted as a key element of the technology competence area, the actual skills related to its use are defined very loosely, as the students’ ability to “understand the basics of MT systems and their impact on the translation process, and integrate MT into a translation workflow where appropriate”. As such, what is considered as “basics” and what must be taught to students to reach this level of competence, appears to be left to the judgment of the universities themselves, likely leading to disparities between different degree programmes. Similar comments and criticisms have been made on earlier versions of the competence framework as well, namely by Salmi et al. (2023, 297) on the 2017 version.

Another EMT-related feature worth noting is the level at which training is done. EMT member universities may often face difficulties including more extensive translator training earlier on in the students’ education, namely on the BA level, as the guidelines and restrictions set in place by the network pose various obstacles for this. EMT programmes are always Master’s level programmes, and therefore the competences defined by the framework must be included in training at that level. As a result, universities may be inclined to avoid including similar content earlier on the BA level, to avoid unnecessary overlap and repetition in the curriculum. This in turn may further contribute to the creation of separate technology-themed courses or modules and steer more detailed MT related education away from the beginner level, which could arguably be the most beneficial point of such knowledge acquisition.

All in all, differences in definitions of what constitutes translation technology and MT use competences can present challenges both for students' learning and for proper evaluation of their skill acquisition.

2.3 Machine translation literacy

One possible way to evaluate the extent of students' MT-related technology competence acquisition is through inspecting their *machine translation literacy*. A working definition for this is provided by Bowker and Buitrago-Cirio (2019, 88) in the context of scholarly texts and their translation, however, the version I cite here is one adapted from the original by Nurminen (2021). In her doctoral dissertation, Nurminen adjusts Bowker & Buitrago-Cirio's model, making it more generalisable for a wider variety of text types and use contexts, and describing MT literacy as follows:

MT literacy is defined by an MT user's ability to:

1. Comprehend the basics of how machine translation systems process texts
 2. Understand machine translation systems' strengths and weaknesses
 3. Understand how machine translation systems are or can be used for purposes that are important to the user
 4. Appreciate the wider implications associated with the use of MT
 5. Assimilate information from raw machine-translated texts
 6. Evaluate how machine translation-friendly a text is
 7. Create or modify a text so that it can be translated more easily by an MT system
 8. Modify the output of an MT system to improve its accuracy and readability
- (Nurminen 2021, 43–44)

In summary, MT literacy can be seen as a person's ability to understand both MT's basic ways of operating and also its more subtle nuances, encompassing comprehension of its various strengths and weaknesses, both suitable and unsuitable applications, and different ways of critiquing, editing and otherwise applying machine-translated texts as part of one's workflow. While this definition also refers to understanding the "basics" of how MT functions, the various subsequent skills and knowledge areas are more explicitly defined than in that of the EMT framework, for example, thus giving a better base for evaluating students' MT-related competences.

In effect, proper MT literacy enables effective, adaptive and ethical use of MT technologies. Exploring students' MT literacy and the gaps therein can serve as an apt way to identify

areas in which further technology training may be needed in EMT and other translation degree programmes. Possible ways of evaluating students' level of MT literacy are examining their conceptualisations of MT, as well as mapping out their MT use and purposes, in addition to inspecting their ability to name various issues and identify texts which are well/poorly suited for MT. In the following section, we will move to examine some studies exploring these topics.

2.4 Research on students and machine translation

2.4.1 Past trends and newer perspectives

In the past, research pertaining to MT use, attitudes and perceptions towards said technology has dealt largely with views of professional translators already actively working in the field, mapping out how they utilise different translation technologies in their daily work and how useful they find different tools. Literary translators' TT and MT use has recently been a topic of great interest to many researchers, such as Ruokonen and Salmi (2024), Daems (2022) and Ruffo (2022), stemming from the fact that MT and the translation of creative texts often do not sit well together. Studies on professionals often depict a distinct divide based on the translators' specifications. Literary translators tend to steer away from TT and MT, with much lower usage rates, while business translators working on more informative text types are more likely to favour such technologies (Salmi 2021).

As called out by Pastor (2021, 54) and other researchers, there has been a gap in MT use and attitude related research when it comes to students – the other major interest group using various translation technologies in their translations. Presently, more attention has been drawn to the technological aspects of translator education, and with it, students' views and experiences have begun to emerge into clearer light. In recent years, students' MT views have been studied from different perspectives by different scholars, often through various case studies. Several studies exploring students feelings towards further integrating MT and other CAT tools in the classroom, with a focus on testing out new forms of translation technology didactics have been carried out by Pastor (2021), Valijärvi & Tarsoly (2019), Briggs (2018), Al-Khatim (2022), Sánchez-Castany (2023), Esqueda (2021), Moorkens (2018), Öner Bulut and Alimen (2023), Mellinger (2017), and Man et al. (2020), to name a few.

2.4.2 Students' conceptualisations of MT

Translation students' conceptualisations of MT have been explored, for example, by Salmi et al. (2023). Their study on MA and BA level translation students from Finland and Netherlands sought to discover what sort of different traits and characteristics students relate to machine and human translation respectively, comparing their similarities and differences (Salmi et al. 2023, 295). According to the students' responses to a questionnaire, most of them perceive human and machine translation to be different from one another, when asked whether the two translate in the same way or not (ibid, 299–300). When comparing human and machine translation, students identify *using probabilities, translating literally, always translating the same way* and *using logic* as features unique to MT, while characteristics such as *creativity, consideration of target audience and situation, understanding of meaning, world knowledge and possession of emotions, cognition and personality* are to them solely human (ibid, 300).

In the same study, Salmi et al. also examined possible misconceptions that students' may have about MT, i.e. one type of gap in their MT literacy. They note that the misunderstandings students have are mostly conceptual and vernacular in nature, with students, for example, failing to correctly comprehend how MT systems work from a technical point of view, attributing characteristics to them which aren't true (Salmi et al. 2023, 301). Students also tend to humanise MT, conceptualising its processes with words and phrases that are distinctly human:

There is also a tendency to humanise machine behavior in several students' responses where they talk about machine "thinking" (L03 and L07), "making guesses" (T24), "having difficulty recognising" (L5), "paying attention to" something (L05), or learning (quote from L30, originally written in English): "On top of that, machines are only able to apply rules that they have either been taught to use or that they have been able to figure out from the context of translations that they have already been given".

(Salmi et al. 2023, 301)

A more recent article from Dorst et al. (2025) expands on this same dataset, further exploring students' MT literacy in the age of generative AI (GenAI), seeking to find out to what extent MT literacy is now entangled with AI literacy. With an expanded dataset and refined categorisation, Dorst et al. find some new top characteristics associated with MT, including *being fast, making mistakes* and *operating mechanically*, but note that overall, the distributions of characteristics remain in line with their previous research (2025, 66–67).

2.4.3 Students' MT uses and attitudes

Students' concrete MT use and their attitudes towards it has been explored by Pastor (2021). Her TT integration experiment explored, among other things, "students' attitudes and perceptions towards MT" and "the extent at which students adopt MT and technology tools and resources" (Pastor 2021, 54).

Out of the students partaking in the study, very few reported using MT engines in a preliminary questionnaire (2021, 56). While students were acquainted with many different MT and CAT tools, they mostly used ones that could serve as online dictionaries (*ibid*). Still, students also reported using MT to assist in their assignments for their courses, with a great number of participants stating that MT could be used as a "problem-solving tool when faced with text fragments containing especially difficult sentences or complex syntactic structures" (*ibid*). Additionally, students mentioned using machine translated versions of texts to compare their own translations to, i.e. as a tool to help assess their work. For other than strictly translation-related motivations, students reported using MT for language learning and for understanding texts in languages foreign to them (Pastor 2021, 56).

As for the students' attitudes towards MT, all of the respondents partaking in Pastor's study "believe that MT can help them to translate under certain conditions" and consider "productivity as the most important advantage" it has (Pastor 2021, 55). Students note that MT does not seem to work for certain text types, and their motivations for using MT depend heavily on text type and the language pair in question (*ibid*). According to Pastor, students perceive MT as a helpful tool with many possible uses (2021, 57). Students tend to respond positively to being trained on MT and TT, with former doubts and negative perceptions changing once they learn more about the strengths and weaknesses of said technologies (*ibid*). With the positive attitudes showcased by students and their desire to be further educated on TT-related matters, Pastor argues that the results of her study "promote the incorporation of technology and MT in particular into the translation classroom in order to enhance students' skills and maximize their employability opportunities" (2021, 57).

A study by Briggs on English language learning students' MT uses and perceptions discovered partly opposing rates of MT use, with a large majority, 85% of students, reporting to using web-based tools (2018, 10). 66% of students used MT in the classroom, while 55% used them in their free time (*ibid*). Differences may be explained by the students' differing backgrounds: Briggs' respondents were language students with varying levels of both language

skills and translation experience (2018, 10), while Pastor's were translation degree programme students (2021, 49).

Regardless of use rate differences, students' top motivations for MT use appear similar. Above all, students use MT as a vocabulary tool to search for lexical meanings of individual words, and secondarily to complete their assignments and to help with their L2 writing, both in and out of the classroom (Briggs 2018, 11). They also use MT to help facilitate foreign language communication (ibid). When examining the directions of MT use (L1-L2 vs L2-L1), Briggs' findings suggest that use is fairly balanced, with a little over half of the participants using MT both ways, 29% more from L1 to L2 and 19% more from L2 to L1 (2018, 10).

Students express mostly positive attitudes towards MT. Nearly half of them believe that MT "has value as a language learning tool", while roughly 21% disagree with this (Briggs 2018, 12). A little over half of the students also agree that using MT in class should be allowed and very few are against this (ibid). However, students do not appear to blindly trust the output provided by MT for their assignments and are critical of its accuracy (Briggs 2018, 16).

Yet another experiment was conducted by Valijärvi and Tarsoly, testing Google Translate's applications as a learning tool for language students of different skill levels, introducing them to different possible uses for the technology (2019). Their study did not explore students' MT use purposes in detail before their classroom experiments and instead had students try out different language learning related uses through various analytical tasks (ibid). However, in a written survey given to the students, all of the participants reported to using Google Translate as a translation tool and half of them as a learning tool, both when dealing with short text fragments (micro level) and longer texts (macro level) (Valijärvi and Tarsoly 2019, 65). Once more, students' extent of MT use appears to vary between studies, likely based on the participants background: translation students report lower use rates, while language learning students report higher ones. Regardless, the top strengths mentioned remain similar. In Valijärvi and Tarsoly study, as well, MT's greatest strengths were considered to be its "speed, convenience and accessibility" (2019, 70).

There is still, as noted by some of the aforementioned authors, room for further study on students' MT use and a research gap to be filled in the form of a more extensive mapping of their attitudes, perceptions and evaluation of their overall level of MT literacy. While many studies have mapped out general use rates of students studying in different fields, research is still somewhat lacking in more generalisable results, comparisons of current and future MT uses and examinations of students' perceptions in greater depth, looking into how well they comprehend various advantages and issues related to MT. In effect, this calls for combining

several of the methods used in previous studies into one and applying them to larger groups of participants, gathering various numerical data regarding the extent of different MT use purposes, contrasting these numbers with students' perceptions of the technology, and comparing their perceptions and attitudes with their actual skills using practical tasks, while also contrasting the results against previous research.

3 Context of the study and its methods

3.1 Participants and setting of the study

The students participating in my study are language students from the University of Turku, more specifically students attending the *Basics of Translation* (BoT) course, usually done in the first year of their studies. The course is a Finnish-to-English translation course, which consists of a mix of translation theory teaching and practical hands-on translation tasks done mostly in groups of four, with a heavy emphasis on the practical work. This is also the course on which I worked as a course assistant and from which the initial self-reflection questionnaire data was gathered.

BoT is a bachelor's level course, and the University of Turku is part of the EMT network. This, in turn, is reflected in the contents of its courses. Prior to taking part in this study, students had attended one lecture dealing with translation technology, during which MT was described to them briefly in general terms, discussing some of its applications and cautioning on some problematic elements related to it (e.g. applications in literary translation). With no in-depth training available at this level, students were instead directed to look into some optional TT study modules later in their possible MAs, should they wish to learn more about the topic. In addition, students were provided with various MT-related reading materials on the course Moodle page, which they were encouraged to study in their free time. At the time of taking part in this study, students were expected to have at least some idea of what MT is, how it works and what it is good and bad for.

For the purposes of this thesis, data was gathered from a classroom experiment, executed a total of three times, during three different iterations of the *Basics of Translation* course: Autumn 2023, Spring 2024 and Autumn 2024. From now on, I will refer to these iterations and their participants as the A2023, S2024 and A2024 groups respectively. The motivation for multiple iterations in place of a singular case study was to have the possibility of comparing different groups with one another, as well as making sure the results are more likely to be generalisable with the inclusion of more participants.

A total of 111 students participated in the multi-stage classroom experiment. 39 students from A2023, 38 students from S2024 and 34 students from A2024. Although the tasks completed as part of this experiment were mandatory assignments for the course itself, the participants were given the option to opt out of the study and thus not have their answers included in

the analysis and discussion of this thesis. In the end, only one participant chose not to partake in the research. The remaining participants consist, for the most part (73.9%), of students from the School of Language and Translation Studies, with English as their major subject. A little over a fourth of the participants are minor students, coming from departments of other languages, pedagogy, folkloristics, literary studies, et cetera. Out of the three groups taking part in my research, S2024 had the largest portion of minor students, at 45% of the attendees, while the autumn groups only had 10% and 9% each.

The participants are between 18 and 48 of age, with an average age of 22. Out of all the participants, around 39% have some type of previous translation experience in addition to the basics course they were attending, with 14% having experience from other translation courses, 14% from fan translation, 5% from working as freelancers or as language service providers (LSPs) in translation companies, and 12% from other translation related activities, such as translating and interpreting for family or friends.

3.2 Data gathering methods

In its entirety, the classroom experiment conducted in BoT involved three separate stages: the first two in which students analysed, marked and commented on errors in a machine-translated short story, and a third in which they responded to an online survey regarding their MT use and MT literacy. Due to the large scale of this study, the survey will serve as the focus of interest here, as analysing each task from the first two stages along with it is not within the scope of this thesis. The remaining stages will be examined in detail in subsequent research.

In the third stage survey, students were asked to report which MT tools they use, their use purposes both in and out of academic contexts, what they think of the technology, how they would evaluate it in various ways, as well as their thoughts on the tasks completed in the previous stages (see Appendix 1). The survey was designed and created by myself, specifically for the purposes of this study. Prior to being given to the actual participants, the survey was tested by the teacher of the BoT course as well as two translation MA students, based on whose feedback some adjustments were made to the contents. The survey features both multiple-choice type questions and more open-ended questions and is divided into four thematic sections: background information, MT use, opinions on MT, and *Theatre of Cruelty* (i.e. thoughts on the ‘short story error analysis tasks).

In Section I, the participants were asked to fill in some background information regarding themselves, including their full name, their major subject, their age, and whether they have any previous translation experience. The participants' gender or other more personal characteristics were not taken into consideration in this study. Information from this first section is used primarily to connect students' survey answers to the error analysis tasks completed in the previous stages, as well as to give some possible explanations for certain disparities in the students' answers, e.g. when it comes to the extent of previous translation experience. While students' names were gathered for the purposes of linking the different stages, all their answers will be treated anonymously in this thesis and in subsequent research, with each participant instead referred to by a specific code using the following format:

$$[\text{GROUP}] + [\text{YEAR OF DATA GATHERING}] + [\text{NUMBER WITHIN GROUP}]$$

$$=$$

Participant A2216 (example number)

In Section II of the survey, the questions aim to map out the students' use of MT systems: whether or not they have used them before, which programs they have used, what purposes they have used MT for in their academic assignments, what purposes they have used MT for *outside* of academic work, whether they use MT more often from L1 to L2 or from L2 to L1, and whether they believe they will use MT in their academic work and/or free time in the future. The data gathered from this section is mostly quantitative and helps answer questions regarding both how much MT is used by the students and what for.

In Section III, the participants were asked questions about their personal opinions and perceptions regarding MT technology. They were tasked with evaluating the accuracy and usefulness of MT on a scale from 0 to 10, as well as describing in their own words the technology's strengths and weaknesses and what types of texts they think it is best and worst suited for. The participants were also asked their opinion on whether MT and translation technology related topics should be featured more prominently in translator training at their university.

Lastly, in Section IV, the participants were guided to discuss their experiences regarding the MT error analysis tasks done in stages 1 and 2. Following a couple of background questions regarding the used text and its author, they are asked to evaluate the quality of the machine-

translated text, how challenging it was to identify and explain the issues found in it, whether it would be worth it for a translator to try and post-edit the text in real life, and whether working on the task changed their views on MT in any way. This section will be analysed in the future along with the related tasks and will not be included in this thesis.

A detailed list of all the questions and multiple-choice options of the survey can be found in the appendices (see Appendix 1).

3.3 Methods for analysis and supplementary data

This study does not employ any predetermined research apparatus or categorisation in its analysis and is instead heavily data driven, seeking to discover trends that may be explored more in-depth in the future and providing a base for reference for subsequent studies. Comparisons to other studies (examined in Section 2.4.2 and 2.4.3 of this thesis) and their findings will be drawn when relevant observations are made during the analysis. In addition, when applicable, the students' knowledge and abilities will be contrasted with Nurminen's (2021) characteristics of MT literacy, but not strictly graded in any way.

Multiple-choice and Likert-scale type questions will be analysed mainly quantitatively, but speculations as to the reasons behind some of the results will be provided when relevant. Open-ended questions will be examined qualitatively through a thematic content analysis, taking note of any similarities or disparities within and between the responses as well as pointing out possible trends.

In addition to the data gathered in the survey, some of the data from in the initial BoT course self-reflection questionnaires used in 2022 and 2023 (Vainio 2024) will be taken into consideration in the analysis. However, the data used from these questionnaires will only be from one multiple choice question regarding translation tools and reference materials that the students used in their assignments. Although some of the participants are the same in both studies, the self-reflection questionnaires were gathered entirely anonymously and thus cannot be directly linked to individual student responses.

4 Analysis and discussion

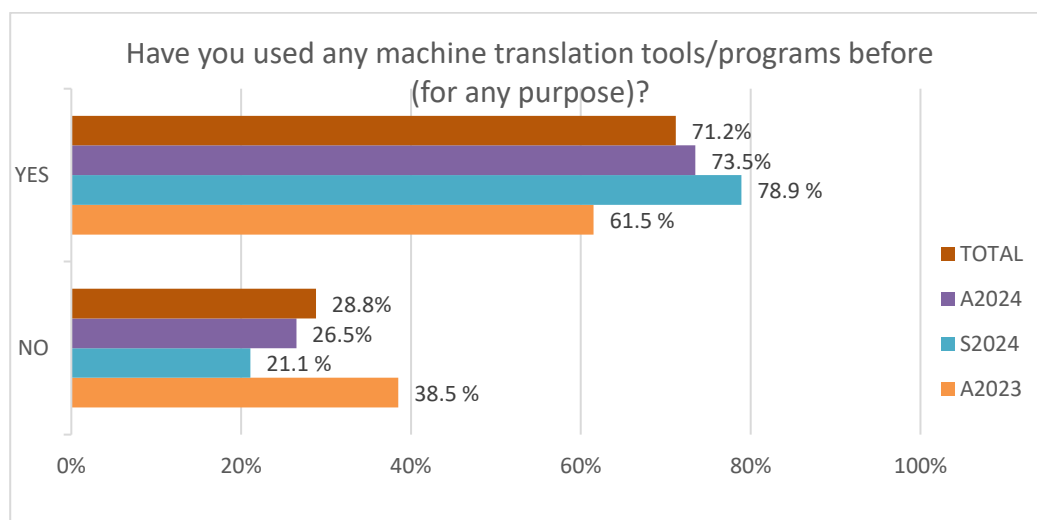
I will now move to analyse the students' responses, proceeding section by section, largely following the structure of the survey. The exception to this structure is Question 15 (Figure 9), which is analysed together with questions from SECTION II for a better thematic fit. In addition, responses to SECTION I: Background Information have already been discussed in Section 3.1 of this thesis, when describing the characteristics of the participants of the study.

Generally, when speaking of *the students* in this thesis, I refer to the entire group of participants (n=111). However, percentages in Figures 3 and 5 are calculated not from this total, but from the number of students who reported to have used MT previous (n=79), in order to clearly illustrate the distribution of different MT use purposes within this group. To depict MT use rates in reality and for the sake of comparison, I will also present percentages calculated out of the total 111 students in Figures 4 and 6.

Different autumn and spring groups are, for the most, treated together in the results, but some more notable disparities in responses between the groups are occasionally mentioned and illustrated separately in the charts (Figures 1 and 2). In addition, while the whole total of 111 students responded to SECTION I and II, one student did not respond to any of the questions in SECTION III. With only one participant's answers missing, however, this is not expected to affect the generalisability results.

4.1 Students' machine translation use (Survey SECTION II)

Figure 1: Student use of MT (all students)



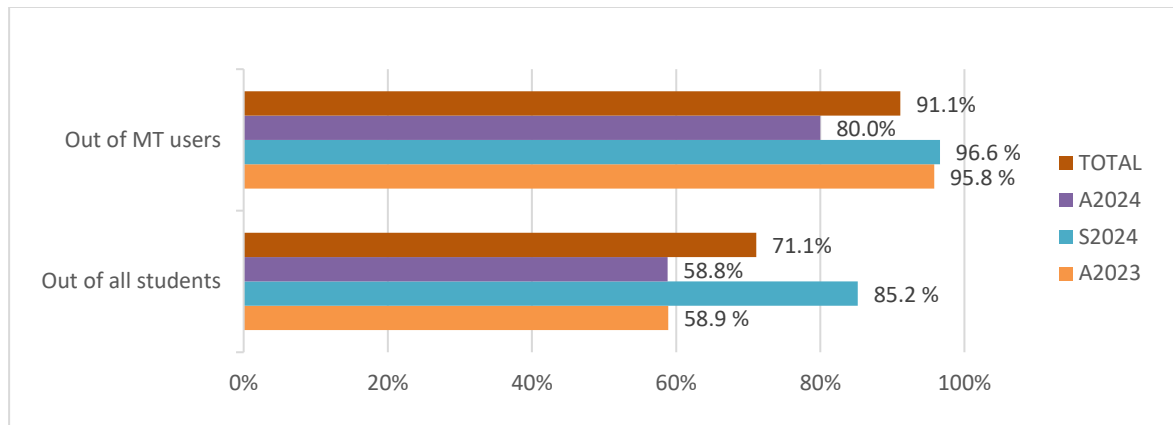
As illustrated in Figure 1, on average a total of 71.2% of students responding to the survey report to have used MT previously for some purpose, be it for their academic work or in their free time. The most popularly used MT programs, as identified by the students themselves, are *Google Translate* (68 mentions) and *DeepL* (18 mentions), with a stark difference even between the top two. Other tools and programs with isolated mentions include *Papago*, *Mtool*, *Yandex*, *Sugoi translator*, *Microsoft Word translator* and *jisho.org*.

However, there is an intriguing element present in the students' answers in the form of identifying different online dictionaries and generative AI engines as MT tools. The top online dictionaries that students report using are *MOT dictionary* (19 mentions), *sanakirja.org* (13 mentions) and other/unnamed dictionaries (9 mentions total), with *MOT* being a more popular choice among those with some previous translation experience and *sanakirja.org* being preferred by those with none. Put together, dictionaries become the second most popular tool used, and yet, only four of the students reporting to using online dictionaries explicitly mention using the inbuilt MT tools in *MOT* and *sanakirja.org* instead of the basic dictionary search, making it unclear whether the rest also refer to using specifically these features, or whether they are simply confusing online dictionary use with MT use.

After the release of ChatGPT-4 in late 2023, there is also a small but noticeable presence of GenAI as a translation tool. While only one participant mentions using it in the A2023 group, there are six users in S2024 and five in A2024. This may indicate a slowly emerging preference and a possible shift away (at least partly) from more traditional MT models towards interactive AI interfaces in the future. Students' conceptualisations and misconceptions regarding the interlinked nature of MT, online dictionaries and AI will be further explored in Section 4.4 of this thesis.

Next, Figure 2 below depicts the extent of MT use for specifically academic purposes, both within MT-using students and out of all students together:

Figure 2: Students' academic MT use rates (MT users vs all comparison)



On average, 71.1% of all students or a 91.1% of MT-using students report using the technology in their academic assignments. The percentages discovered here are different from the previous self-reflection questionnaires analysed in a BoT course report, which were 47.4%, 45.5% and 38.9% of all students respectively (Vainio 2024, 9–11), and also of those found by Pastor (2021) and Briggs (2018): Pastor's discovered rates were lower and Briggs's higher. When looking at the autumn groups (Figure 2, all students), however, the reported rates closely match those discovered in the ELIS 2024 survey, which placed translation student MT use rates at 56% in 2023 and 58% in 2024 (2024, 35). The Spring 2024 group, on the other hand, exhibits a much higher portion of academic MT users in contrast to the others, with the great number of minor students possibly contributing to this statistic, as their English language skills may not be the same as major students'.

Figure 3: Students' MT use purposes in academic assignments (MT users)

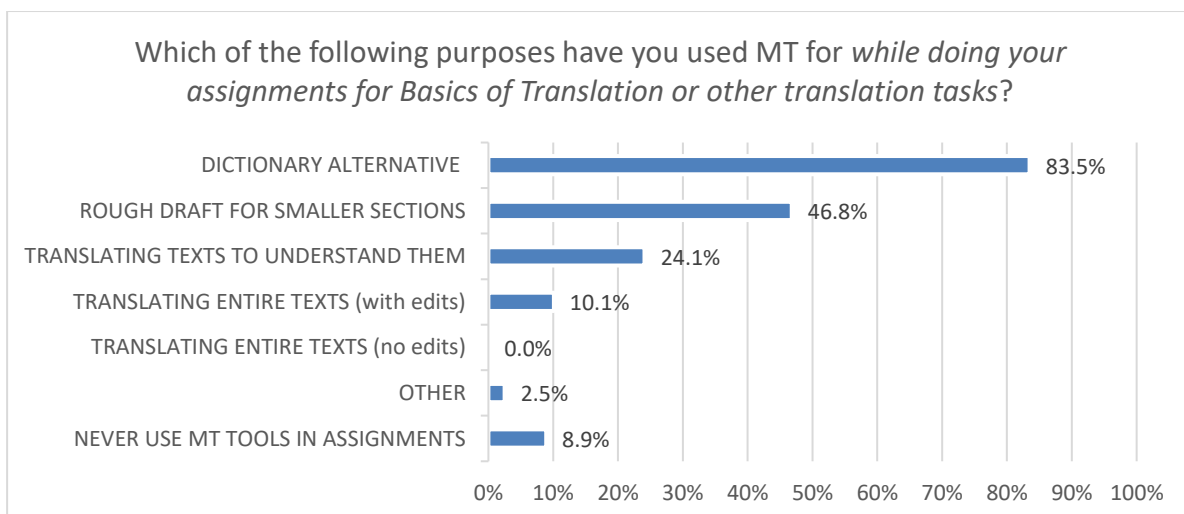


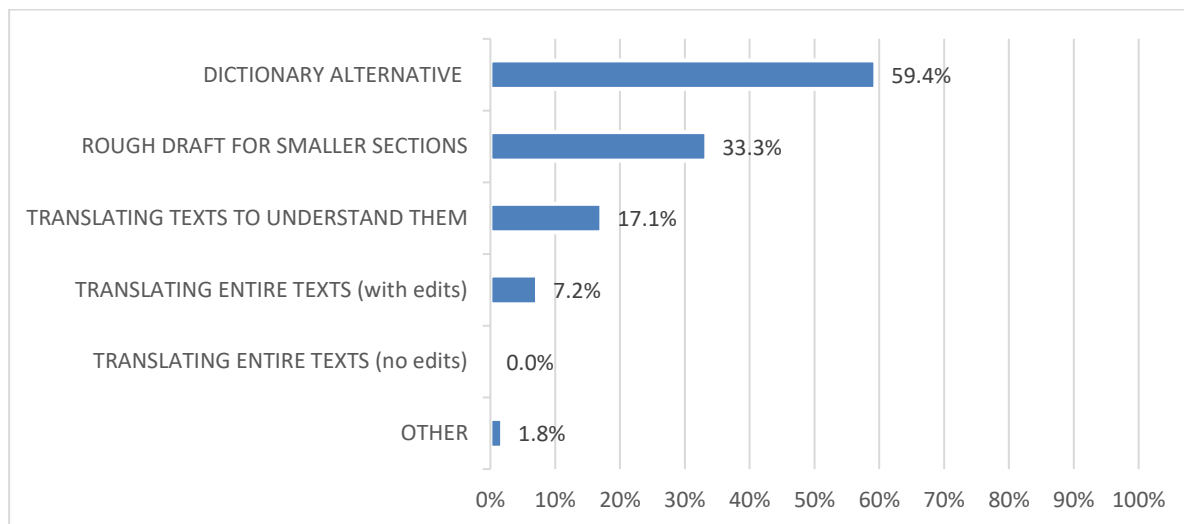
Figure 3 depicts the different purposes students have used MT for in their assignments on the course they attended or in other academic translation tasks. As the most popularly chosen option, students report using different MT tools as alternatives for online and/or physical dictionaries, quickly looking up translations for individual words or phrases. This, again, is evidence of students' tendency to include "single word style" MT use under the same category with actual dictionary use. In my initial self-reflection questionnaires, 94.3% of *all* students reported using dictionaries and 43.9% MT tools (Vainio 2024, 9–11). This indicates that, when given the clear option to separate the two, students tend to leave only the more extensive MT uses to the MT-specific category. As such, it is important to classify the different MT uses and list them out to the students when inspecting how much they utilise said technologies. As we will continue to see, if students are not sure what exactly counts as using MT, it will not only confuse them but also present challenges for properly gauging their MT use.

Secondly, for roughly 47% of MT-using students, MT acts as a starting point for translating on the sentence level or when dealing with certain shorter passages of text, i.e. by inputting a section into an MT to get a rough idea from which they begin editing. Thirdly, around a fourth of MT-using students use the technology to translate texts other than the actual translation task at hand, such as parallel texts or other information related to the assignment, in order to better understand the topic and accumulate useful knowledge. This option is one picked for the most part by those students who reported having some previous translation experience ($n=14$) and more rarely by those with none other than the course they were attending ($n=5$). Lastly, roughly 10% of MT users translate source texts in their entirety with MT and then edit these texts afterwards, effectively engaging in post-editing instead of translation proper when completing their assignments.

None of the participants reported using MT to translate entire texts without editing them later on. This either does not happen at all, or if it does, students are not willing to admit to it and for good reason: it is not allowed on the course they are attending. In addition to the choices provided in the survey, there were only two other purposes identified by students: using MT for "translating the source text entirely, but using it as a comparison to [their] own translation" (Participant A2431), as well as "translating lists in source text" (Participant A2401), the latter of which is unclear in its exact meaning but could likely be grouped under the '*starting point for translating individual sentences or smaller sections of text*' category.

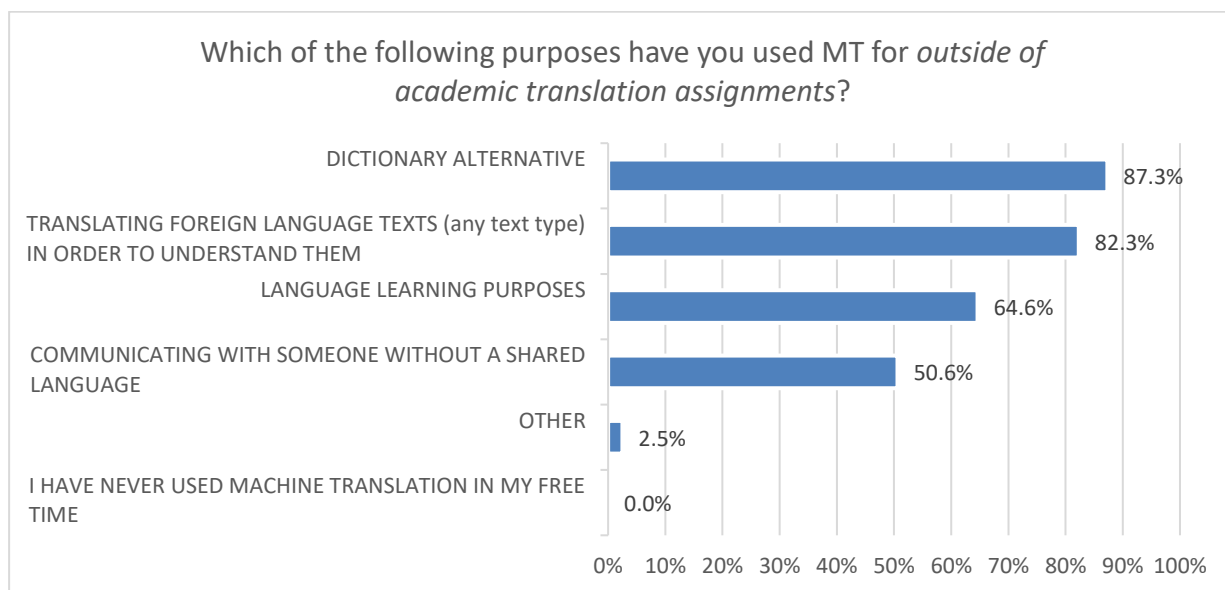
For the sake of comparison, Figure 4 below shows the extent of these different MT use purposes calculated out of all students, including those who do not use MT. Notably, the dictionary alternative use rate once again closely resembles that of MT use rates discovered in the ELIS surveys.

Figure 4: Students' MT use purposes in academic assignments (all students)



Moving from academic MT use to the students' free time MT use, we see both similar and different motivations depicted in Figure 5:

Figure 5: Students' MT use purposes outside of academic assignments (MT users)

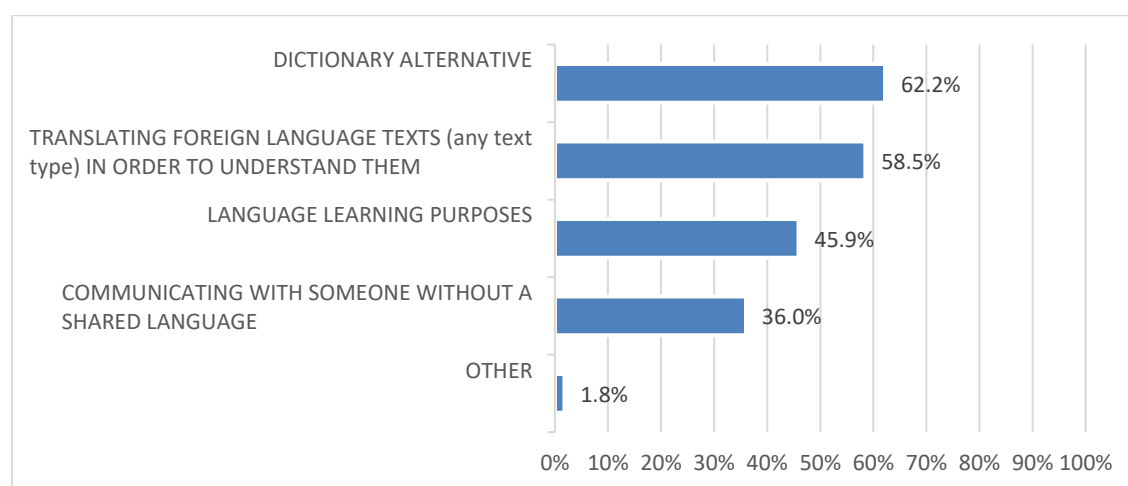


Students' non-academic MT uses deal largely with language comprehension, learning and communication. In this field too, MT works most popularly as a dictionary alternative, with an

87.3% use rate among MT-using students. Close behind, 82.3% MT-using students use the technology to translate and comprehend foreign language texts for information gathering and entertainment purposes. Thirdly, 64.6% use MT for various language learning activities. Roughly half of MT-using students also use it for communication between them and someone they do not have a shared language with. Once more, only two other purposes were identified by students: using MT for fan translation projects, and translating complex scientific texts to better understand them, of which the latter belongs to the second category listed in the survey.

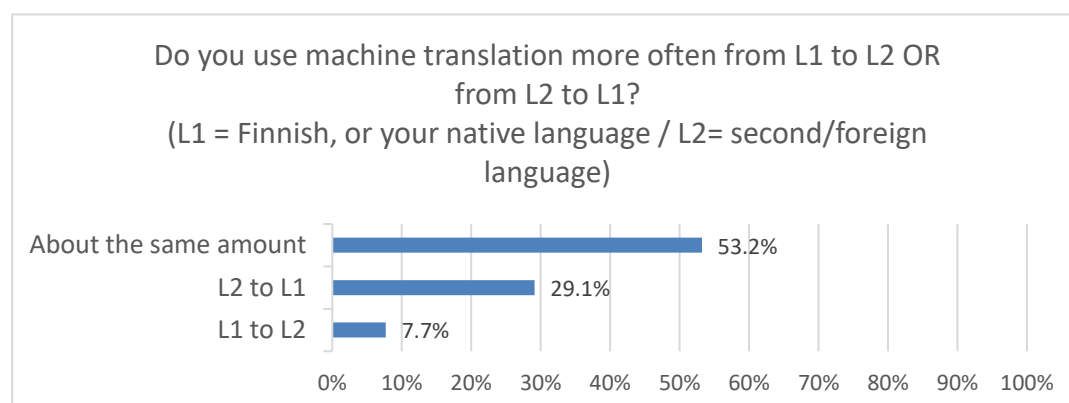
As with Figure 4 previously, Figure 6 below presents the identified use rates out of all students:

Figure 6: Students' MT use purposes outside of academic assignments (all students)



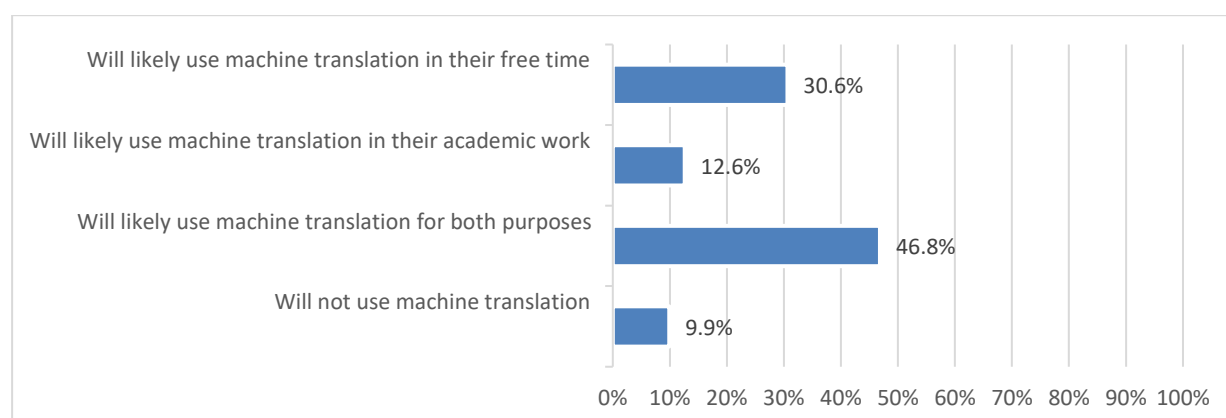
After identifying different use purposes, students with previous MT experience were asked whether they used MT more from their L1 to L2 or vice versa.

Figure 7: MT use direction (MT users)



Examining students' MT use direction in Figure 7 reveals distributions that are both similar and different to those discovered by Briggs (2018). Like in Briggs's study (2018, 10), a little over a half use MT indiscriminately, roughly the same amount in both directions. However, 29.1% of the students participating in my survey report using MT more to translate from a second/foreign language to their first one, likely in order to understand texts, and only 7.7% report using it more often in the opposite direction, likely for producing translations. In effect, these portions are opposite to Briggs's discoveries (ibid). Two students also remarked often using MT between two foreign languages, i.e. from L2 to L3 and vice versa. Any discrepancies are likely due to differences in the participants' background and their language skills: Briggs' participants were Korean university students attending a course teaching communication in English, with little previous experience, while the students in my study are university students already specialising in the language as their major. Thus, their motivations are also likely to be different.

Figure 8: Students' estimations of their future use of MT (all students)

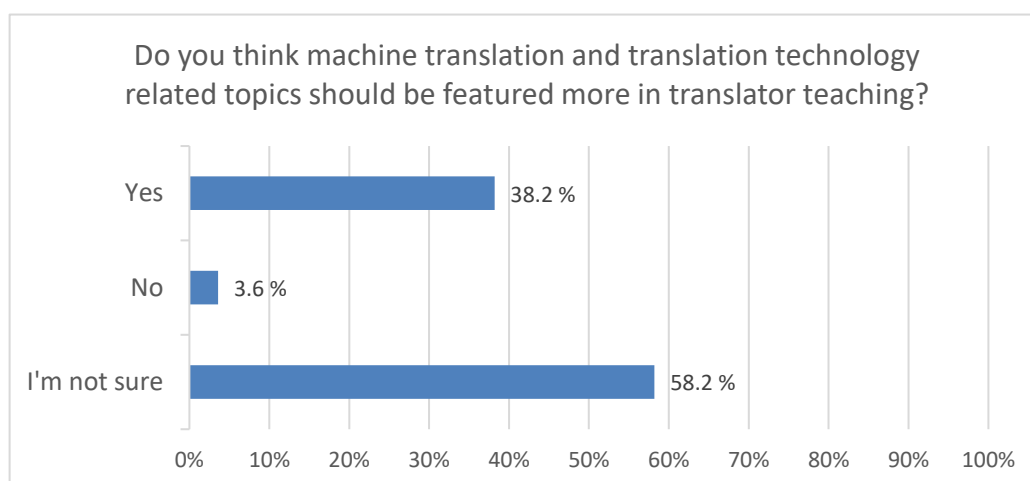


At the end of SECTION I, all students were asked to think about their future MT use, both in their academic lives and in their free time. Overall, they estimate that their use rates will likely increase. While 79 out of 111 students reported to using MT at the time of responding to the survey, a hundred of them estimate they will use it in the future in some capacity, raising the average use rate close to 90%. As illustrated in Figure 8, 30.6% report that they will likely use MT exclusively in their free time, 12.6% exclusively in their academic work, and 46.8% for both purposes. Only 9.9% of students predict that they will not be using MT in future for any purpose, a stark difference to the current 28.8%. Table 1 further illustrates the estimated changes in different types of MT uses in comparison to the present use:

Table 1: Comparison of students' MT use – present and future predictions

USE TYPE	PRESENT MT USE RATE (reported by students)		FUTURE MT USE RATE (estimated by students)	
	Free time	79/111 students	71.2%	86/111 students
Academic	71/111 students	63.9%	66/111 students	59.4%
None	32/111 students	28.8%	11/111 students	9.9%

As shown above, students' academic—and likely also professional— MT use is estimated to decrease slightly, by 4.5 percentage points, while their non-academic/free time use will increase slightly, by 6.2 percentage points. The number of students not using MT at all will decrease by 18.9 percentage points. As such, somewhat paradoxically, the students' estimations suggest that there will be a shift in the userbase, with some of those who do not currently use MT suggesting they will become MT users in the future, while some others that do indicate they will move away from using the technology.

Figure 9: Students' views on increasing MT and TT training (all students)

Students were also asked their opinion on whether or not they feel that MT and translation technology in general should be taught more extensively when training future translators. As shown in Figure 7, only 3.6% of students are against featuring MT and TT more prominently in teaching. A little over a third agree with further MT-related training, but a majority remain undecided. It may be difficult for students this early on in their studies to properly gauge how

much they need to know and what exactly they need to be taught about translation technology. Nevertheless, the vast majority are at least open to the possibility.

4.2 Discussion of student MT use

The students responding to the survey in this study are somewhere in between the studies conducted by Pastor (2021), Briggs (2018) and Valijärvi and Tarsoly (2019): they are university level language students attending a translation course, and thus, sharing characteristics with all previous groups studied. Despite not yet being translation degree students, their use rates still closely match those reported by such students in the ELIS surveys (2024; 2025). However, there is still some reason to suspect that rates in any previous study (including mine) are not entirely accurate, and that student use of MT may be more extensive than reported, with students' answers not necessarily reflecting reality. In the context of my study, it seems somewhat unlikely that almost a third of students attending a translation course, who for the most part are language majors, have never used MT once in their lives for any purpose at all. There is still a stigma surrounding MT in academic environments and students may be unwilling to admit to using the technology, especially on a course where its use has effectively been forbidden. Students may feel that MT use reflects negatively on their language and even be ashamed over their use of MT, as suggested by a student in Vainio (2024, 14): "Google Translate [is my most used tool]. I now know it shouldn't be used though."

These types of feelings may affect students' willingness to respond honestly to a survey such as this and may explain some of the differences between current uses and past and future estimations. It may be easier for students to report what they might do in the future instead of what they do now. On the other hand, these future predictions may also be used to justify some of the current uses, i.e. noting that they may be using MT in their academic work now but also assuring that it won't be for long to avoid possible judgment. Another possible reason affecting students' response rates is a simple matter of time and motivation. By checking the "I have never used MT" option students avoid answering to several subsequent questions regarding what they have used it for, thus getting through the survey quicker. In some cases, though hopefully not many, this may have some effect on answers.

Students' difficulty making a clear distinction between MT tools and online dictionaries may also have a significant effect on the accuracy of the data. If students do not properly

comprehend what machine translation is and isn't, how can we expect them to accurately report using it? As noted before, this is an aspect that must be carefully considered whenever studying students' MT use.

Now moving to discuss the actual use purposes identified by students, with the most popular academic use for MT being that of a dictionary alternative, one could argue that the risk for critical translation errors is lower, at least in terms of quantity, as dealing with individual words or phrases in comparison to translating entire texts presents numerically fewer opportunities for mistakes. From a pedagogical point of view, dictionary-style use may also be considered better, as it means students still engage in manual translation for most of the text. However, not many MT tools provide register-specific translations and not all of them suggest possible synonyms or alternative translations. This is often where various data-driven biases and issues relating to ambiguity may present themselves. While the most likely translation is suggested, this may still not fit the larger context or commission.

For this type of MT use to be unproblematic then, would require the students to be aware of these issues and to actively engage in critical use of MT in tandem with more specialised dictionaries, term banks and other resources to compare the results with. Valijärvi and Tarsoly, for example, argue for the benefit of introducing analytical exercises to raise this kind of awareness. In one of their experiments, testing *Google Translate* as an alternative for a bilingual dictionary, they found that when engaging in such exercises in class, students became more critical users of MT and were “alerted [...] to the importance of double-checking their results from other online sources or a printed dictionary”, thus learning not to solely rely on MT as a dictionary tool (2019, 66). It is my hope that the two error analysis tasks students have done prior to responding to this survey would provide them at least some background for critical thinking.

Arguably a more concerning use of MT then is when students use the technology to translate longer passages or even entire texts for their assignments. Although a small minority, 10% (7% of all students) is still notable in a group of students that have been specifically told to *translate* texts from scratch, not *post-edit* them. As discussed earlier in this thesis, the ability to post-edit machine-translated texts effectively is a highly sought-after skill in the current translation job market, and thus, an important area of expertise for students to grasp as well. However, when it is not the purpose of an assignment they are given, this type of MT use is ill-advised: an effective post-editor should still possess the needed skills to translate from scratch, and students should have built this foundation before expanding to these more adaptive tasks.

The need to first learn translation without help from translation technology is an opinion commonly shared by translation trainers and teachers (Sánchez-Castany 2023, 487).

Still, a noteworthy counterpoint to make here is that not all students attending the BoT basics level course in my study will go on to become translators in the future or even attend a related degree programme or other translation courses for that matter. Some such students may not be as motivated to put in the greatest effort in their translations or strive to acquire proper translation skills or experience and are more concerned with simply passing the course as one part of their mandatory studies, using any means necessary. Regardless, one would argue that possessing proper MT literacy skills benefits just about anyone in any field that is part of the increasingly technologized job market.

4.3 Students' MT attitudes and perceptions (Survey SECTION III)

I now move from analysing students' MT uses to examining their perceptions and attitudes regarding the technology. All students were told to respond to all questions in SECTION III, regardless of whether they had personally used MT previously or not.

At the start of the section, students were first asked to evaluate the general *accuracy* of MT on a scale from 0 (Not at all accurate) to 10 (Extremely accurate). When considering accuracy, they were asked to at least keep in mind errors and mistakes made by MT, fluency of its output and its suitability for specific tasks.

Figure 10: Student evaluation of MT accuracy (all students)

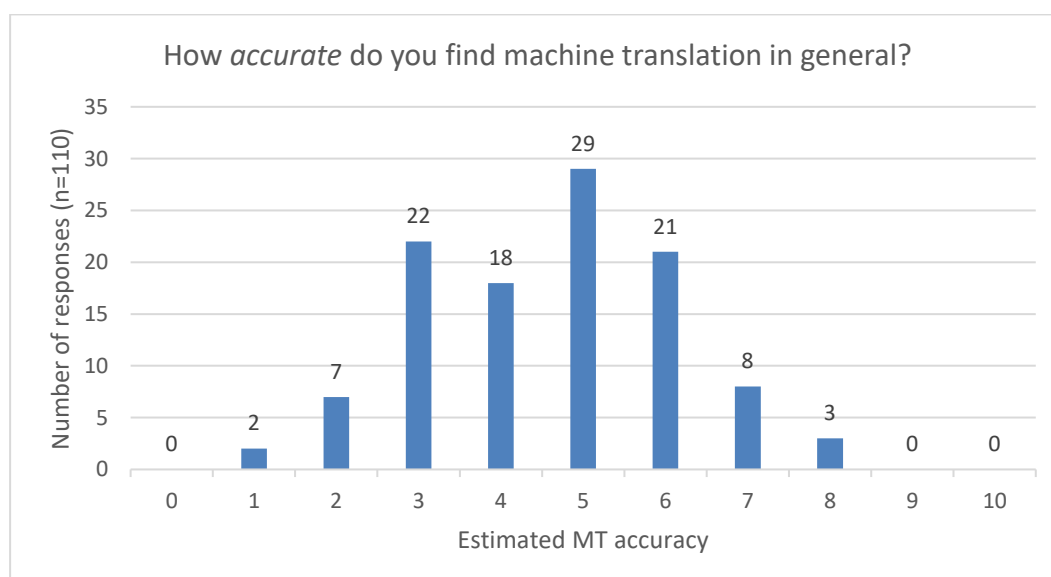
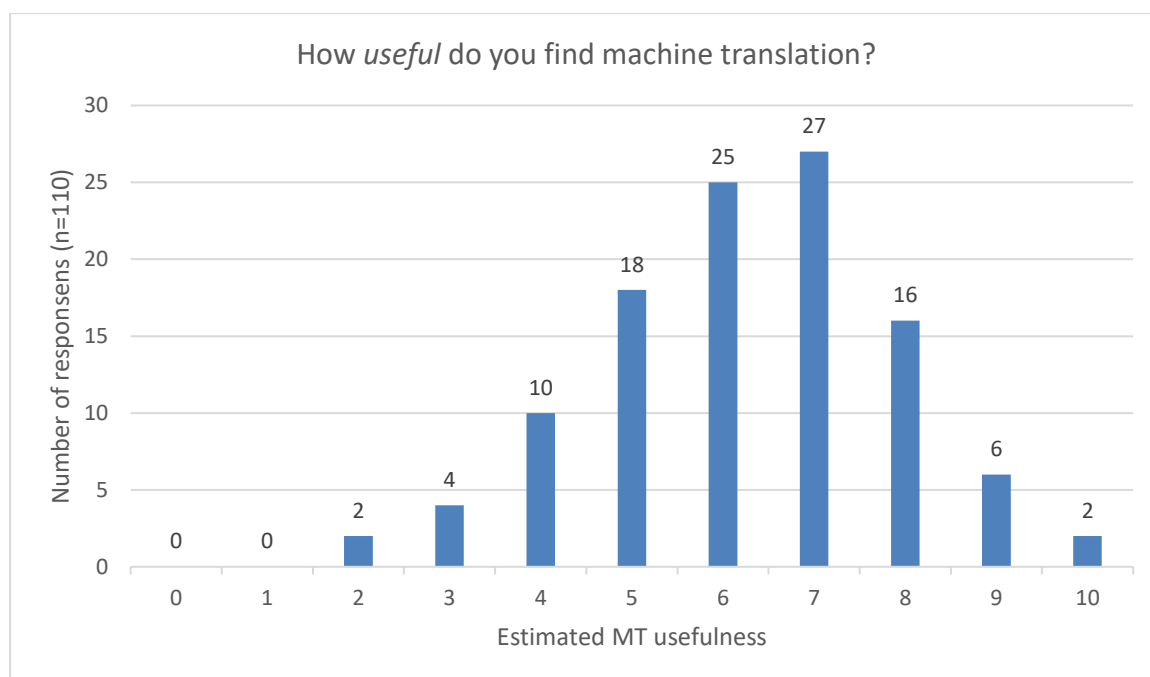


Figure 10 depicts the distribution of grades given to MT accuracy. On average, students rate MT accuracy around 4.6 on the scale, very close to its middle point. With a minimum value of 1 and a maximum of 8, none of the students consider MT completely inaccurate or entirely accurate either. However, student answers do lean towards more negative or at best neutral perceptions regarding accuracy, with only 10% of students rating it anywhere higher than 7 out of 10 and a vast 70% majority rating it 5 out of 10 and under.

Figure 11: Student evaluation of MT usefulness (all students)



When asked to evaluate the usefulness of MT, students report values averaging of 6.2, with a minimum value of 2 and maximum of 10 (Figure 11). Despite rating accuracy relatively low in the previous question, students still appear to find MT quite useful, with both higher minimum and maximum values and with their answer distribution in general leaning towards the higher end of the scale. These results fit findings by Valijärvi and Tarsoly, who note that even though students are aware of issues related to MT, most of them use it regardless, as possible problems are “often outweighed by practical considerations”, i.e. the overall usefulness of the technology (2019, 65 & 71).

4.3.1 Student thoughts on MT strengths

Following the evaluations given on accuracy and usefulness, students were asked the following open-ended questions with unlimited space to write out their answers:

**What do you think machine translation is good for? What are its strengths?
What types of tasks or texts is it best suited for?**

**What issues do you think machine translation has? What are its weaknesses?
What types of tasks or texts is it worst suited for?**

These open-ended questions received responses that varied greatly in both length and level of detail. Not all students responded to each part of either question, some only pointing out one good/bad thing about the technology or giving examples of text types, with very little elaboration. Regardless, clear trends were present in the responses, with certain themes repeating throughout all three datasets. Next, I will showcase some of the most prevalent ones. When quoting the students, any misspellings and typos have been kept as is.

The strengths of MT that students bring up revolve mostly around MT's practicality. The overwhelmingly biggest strengths students identify are its speed and efficiency, with 34 responses describing MT as quick, fast, efficient or with other similar expressions denoting its processing speed and ability:

It is **quick to process the whole text**. For myself, I use it to make myself **understand text quicker**. I can get a better understanding of nuances or unknown words, etc. with it **quickly**. (A2401, emphasis added)

The biggest strength of machine translation is that it is easy, **on-demand and near instant**. (A2319, emphasis added)

[...]MT can translate these **much faster than humans**, allowing it to take on a bigger portion of work in a **much shorter amount of time**. (A2430, emphasis added)

Speed is not only related to that of MT itself, but it enables students themselves to be quicker too. Students often identify MT as a time saver that can take some of its user's workload and free up time for other tasks:

It saves time and human labour when the machine does the majority of the work for you. (S2410, emphasis added)

It saves quite a lot of time for people who have tons of email to respond to on a daily basis and **makes their work more efficient**. (S2435, emphasis added)

It can process an enormous amount of text in a fraction of the time that a human would have to spend on translating it. (A2304, emphasis added)

I think it is useful in that it **probably can save you some time** as you "only" have to do editing, if the generated text is good. (A2413, emphasis added)

Only one student points out that the speed and efficiency of MT may not in all cases be a positive:

Although machine translation saves time and human labour, these traits can be seen as weaknesses of sorts. I don't think machine translation can be fully trusted if the goal is to produce a grammatically and idiomatically accurate text. Also **the cultural context and target audience of the text being translated create another issue for machine translation which requires human labour**. (S2410, emphasis added)

In addition to speed, another positive characteristic that students mention is a certain effortlessness associated with MT use, often describing it as a tool that is both easy to access and use:

MT's strengths definitely lie in being **easily accessible**, and sometimes provides quite fluent sounding sentences, that with a little tweaking can sound very correct. (A2417, emphasis added)

It's cheap and **fast**. **Very accessible**. (A2418, emphasis added)

Machine translation's biggest strengths are definitely **speed** and **accessibility**. (A2313, emphasis added)

While the words “accessible” and “accessibility” are often used to describe technology that can be efficiently used by people who may have different disabilities (e.g. blindness), what students are more likely referring to here is simply the fact that MT is readily available and easy for them to use. Notably, participant A2418 above is also the only one to touch on MT’s cost-effectiveness, describing it as “cheap”. Almost all MT tools that the students have mentioned using are free, but no one in any of the three groups explicitly names this as a positive. It is possible, however, that not being locked behind a paywall is implied within students’ mentions regarding ease of access.

More than mentioning different positive characteristics, students are eager to give examples of text types and situations that MT is best suited for. Above all, MT is considered best for translating individual words, terms or phrases, with 40 responses mentioning these purposes. When describing such uses, many students use language relating to dictionary use, such as phrases like “looking up a word” or even explicitly comparing MT to online dictionaries.

Machine translation is good for looking up individual words that you are not sure of how to translate them correctly. (A2429)

Machine translation makes single word searches quicker, and many online dictionaries also offer synonyms (and their contexts). (S2401)

[S]trengths: simple translations, individual words that you can't remember, completely foreign languages/words, so that you can get a grasp of what it talks about (S2436)

Individual word searches are used by students for multiple different purposes. Students use MT as a type of bilingual dictionary, in order to understand unfamiliar words and discover their equivalents in another language, but also occasionally use it to remind themselves of words they already know but have forgotten the exact translation for. Thirteen students also identify MT as a way to explore different options for translation: finding possible alternative translations, synonyms or words with otherwise similar meanings.

MT plays a big part in students' comprehension of texts, with many of them describing how it helps them get a “rough idea” of what a text is about or using it for “gisting”:

It is good when you want a rough idea of a text that is in a language you don't understand. (A2414, emphasis added)

Machine translation is **good for getting the gist of things**. Maybe a text might be difficult to read, so it might help translating it in order to be able to look at it with a different mind. Though, I think it is usually better suited for more casual things or material, e.g. a blog post, social media post and so on. (S2418, emphasis added)

The expression of getting a “rough idea” is also used by students to mean a foundation created by MT for their own translations, i.e. a first draft which they begin editing from:

Machine translation will give me a rough idea of what to say but I usually replace most of the words with more adequate ones. (A2318, emphasis added)

It can really help to get started; you get a rough draft or an idea that you can start molding into the final version. (A2313, emphasis added)

As for general characteristics of texts, students commonly state that MT works best with *simple* (24 mentions) and *short* (20 mentions) texts and tasks, often mentioned together. Other expressions that students use to describe well-suited texts include *casual*, *straight-forward*, *easy-worded*, *generic*, *basic*, *clear*, *less complicated* and *using standardised language*. Several students point out that MT is better to use with texts where accuracy and the possible mistakes made do not have serious implications for understanding the text and will not have adverse real-world consequences:

It suits to **simple tasks, where errors usually don't matter that much** or the meaning can be understood even with the errors. (A2401, emphasis added)

I think it's good for **short, simple texts** (to minimize the errors, though the translation should always be checked). (A2327)

It can be suited for producing **texts that are not that consequential**, for example hobbyist works, fanfiction etc. (A2428, emphasis added)

I think it would be best suited for texts that are **simple and straightforward**, unofficial texts and not legal documents or other types of publications. (A2413, emphasis added)

Concrete examples given by students of suitable text types include social media posts, photo captions, websites, blogs, emails, messages, conversations and other forms of communication, technical texts, instructions and manuals and menus. There are also individual mentions of some less conventional or convenient text types and registers that students think would be fitting for MT. Conflicting with the opinions of the majority, two students argue that “machine translation is best suited for fictional texts” (A2328) and that “it is probably best suited for novels and other short stories” (S2415). These, however, are isolated mentions contradicting with the mass, both made by students who report having no previous experience with MT. Having completed the previous error-marking tasks of the machine-translated short story prior to responding to the survey, one would still expect that students would have noticed that these text types are among the most problematic for MT.

Another student also suggests that the most suitable texts for MT could be ones that have been originally written by AI. There may be a misconception regarding the function of both technologies here, mistakenly thinking that a machine will have an easier time translating a text made by another machine, as if they share a mutual understanding of sorts.

4.3.2 Student thoughts on MT weaknesses

When reflecting on MT issues and weaknesses in turn, students name a wide variety of negative characteristics. Above all, students feel that the biggest pitfalls of MT are its inability to “understand” context (47 mentions), connotations and various nuances in texts (10 mentions), as well as the fact that it translates too directly/literally/word-for-word (15 mentions) and that it cannot accurately deal with ambiguous elements with multiple possible meanings (12 mentions). Students also note that MT has trouble making cohesive translations and considering the audience in the translation:

It doesn't do a great job in analyzing the context or in cohesion. Sometimes it can also make very brutal mistakes which can change the meaning of the phrase completely. If the user don't have any knowledge of the language, it can be very harmful. (A2401, emphasis added)

The machine **translates phrases and sayings in a very straight forward manner**, which is why it is not very useful in translating literature. (A2403, emphasis added)

It quite often fails to understand context, nuances, and **has little sense for long cohesive texts**. It is prone to simple mistakes. (S2423, emphasis added)

Machine translation doesn't understand **context nor cultural references, it's meant to translate word for word**. If a text is long, the same character could be referred to by many different names in the MT. **MT doesn't know the audience**, therefore will not remove nor add sections to the text to make it more understandable. (A2417, emphasis added)

It can easily make mistakes, especially on a tad harder texts. **Machine translation can also be inconsistent** which makes it harder for the reader to understand the contents of the text. It probably should not be used for texts with a lot of intertextuality etc. (A2331, emphasis added)

Lack of understanding of context and audience. Worst suited for long texts in a specific field etc. (A2333, emphasis added)

As one might expect, while students think MT is good for short and simple texts, they generally feel it is bad for long and complicated/complex texts and sentences. Students feel that MT struggles the most with creative and imaginative texts, especially ones with a lot of cultural elements (27 mentions), idiomatic expressions and sayings (12 mentions) and names/proper nouns. They also note that MT is not good for texts that feature a lot of specialised or rarer terminology and that it struggles to replicate style:

Machine translation is **worst suited for field specific texts** that have **rare and complicated terms and structures**. (A2320, emphasis added)

Smoothness and linking, cohesiveness and style will not be great. Weaknesses are definitely complex sentences and sticking to the same style. Also, **consistency in its choices** eg. whether to translate proper names or not can be arbitrary for a machine. **Worst suited for essays, anything with humor, sarcasm, satire in it, fiction: poetry and novels as well, something with a lot of cultural cues, and analysing tasks**. (A2411, emphasis added)

It obviously does not share the human knowledge on things such as culture and context, so one weakness is not noticing factors in the text related to those. I believe machine translation is **bad suited for, e.g., prose where there are a lot of metaphors and such culture-related language**. (S2421, emphasis added)

Some concrete examples from students include legal, medical and scientific texts, essays, government documents, and literary texts such as novels, poetry and song lyrics. There are some mixed opinions regarding specific text types. For instance, while academic texts were mentioned by a participant as a suitable example for MT use in the previous question, three other participants think the opposite in this, considering MT worst suited for such texts. Same goes for websites, however, the difference here may be the context of use: using MT to translate a webpage for yourself on the go to understand its contents is different from using MT to create an official translation for a website without editing.

Despite generally positive and lenient opinions on MT, some students express much stricter and more critical thoughts on suitable MT applications than others, cautioning against its careless use with any text type. One student, while rating both MT accuracy and usefulness moderately high (6 & 7), still notes that MT is no good without human intervention:

Alone it is not suitable for anything. It, at least for today, **always needs a human to interpret it** and pluck the useful information from the useless. (A2433, emphasis added)

Two other participants share similar thoughts:

It's good for very basic translations, to get the idea, but **never for anything that will be written down as is. I think it should always be "translated" from the machine's idea to what is actually shown forward.** [...] Machines are not good with context and apparently not very good with forming natural sentences or good literature. As mentioned **I don't think it's good for anything without someone working with it and fixing the text after.** (S2412, emphasis added)

[Machine translation is bad] in longer translations, but also in shorter ones **if the user doesn't understand the context. It doesn't suit to any task without transe-diting or knowledge of the language.** (A2401, emphasis added)

A couple of students express even greater pessimism towards the technology and argue that the applications for MT use are even more limited:

[Machine translation is not good for] anything more complicated than a simple sentence. (A2406)

No machine translation is probably ever going to be at the same level as human translations. (S2411)

One student, on the other hand, is optimistic about future developments regarding MT quality:

Machine translation lacks intelligence and understanding context. But, **I believe that the vast leaps in the quality of AI will nullify these weaknesses.** (S2437, emphasis added)

4.4 Discussion of student attitudes and perceptions

Judging by the survey responses, students on average appear to find MT moderately accurate at best, yet they still perceive the technology as quite useful. There is a correlation between estimations of accuracy and usefulness, with those who rated accuracy as higher often also being more likely to find MT to be more useful and vice versa. Interestingly, there were also some mismatched values present, with some of those who gave lower scores (2–3) for accuracy, still often ranking usefulness surprisingly high (5–7), while one of two participants who gave the highest possible usefulness score (10) ranking accuracy very low (3).

Most students discuss MT strengths and weaknesses from a personal and mostly academic point of view. Only a couple return to reflecting on uses or purposes specific to free time

activities (e.g. language learning) in their open-ended answers and most instead discuss matters pertaining to actual translation tasks, likely drawing from their experiences attending the course at the time of filling in the survey. Students appear somewhat reluctant to consider professional aspects MT and some imply that they are unsure of how more professional tools are used and what it is best suited for at that level of translation:

[Machine translation] helps to get an idea, to get going but cannot be trusted without further research. Works best for tasks or free-time encounters where it is not that critical to use the exactly correct expression. **Professionally perhaps better for short texts and brief sentences which are easier to post-edit than longer ones (?). However, I am talking about the free online tools, I do not have experience on more sophisticated translation softwares.** (S2422, emphasis added)

The distinct positive characteristics students mention are the same as those identified in previous research: MT is *quick/fast, helps save time, can process large amounts of data, is easy to use, accessible and more efficient than a human*. Certain more professional positive elements, such as cost-effectiveness, do not appear in student answers. However, some of the benefits students associate with MT may be implied within other things they have identified. For example, students do not discuss MT's "tireless" nature in comparison to a human, but they do describe its ability to process much larger workloads in less time.

When discussing negatives, students' concerns, for the most part, deal with the quality of MT output and possible immediate real-life effects of its mistakes regarding the texts' understandability and usability. Again, none of the students stop to reflect on the technology's impact on their possible future careers nor do they exhibit the same concerns shared by many professionals, namely worries about devalued work, decreasing pay and harder competition in the face of large-scale translation technologization. The topic of MT use ethics is also absent from students' discussions, with no one paying attention to possible issues regarding copyright and data security, for example, in terms of feeding texts with sensitive or copyrighted information into an MT without the client's/owner's permission. Either students are not aware of these things or simply aren't worried about them at the moment. As for now, students' thoughts are deeply rooted in their present situation: they find the fact that MT can replace a human in certain tasks a great positive, helping ease their workloads and speed up working on their academic assignments.

Students show generally high awareness of MT's suitability for different text types and an ability to think of its applications critically, with many of them indicating that it is best suited for simpler texts with simple structures and texts that do not feature overly complicated language, field-specific terminology, or culture-bound or ambiguous elements. Some of the student responses may appear somewhat contradictory, with many students arguing that MT is most suitable for more structured and rigid text types with standardised language while others advocate for its use for informal, low-consequence and communicative texts – seemingly the opposite. Regardless of these disparities, I would argue that the most important thing is that many students are able to recognise that MT's effectiveness varies case-by-case, depending on the context, function and purpose of the translation, and not so much strictly by text type. While formal and structurally standardised source texts with clear language are usually translated by MT more accurately, informal and casual text types translated for the purpose of general understanding usually have milder consequences even if mistakes are made.

On the other hand, students exhibit a rather black and white way of thinking when it comes to the length of texts suitable for MT: short texts are good, long texts are bad and have more issues. Naturally, longer texts present more possibilities for errors, and issues regarding cohesion and terminology, for instance, are easier to spot when they are repeated throughout the text. Nevertheless, short texts, depending on their contents, may include equally problematic elements for MT. There is some reason to suspect that students may have adopted a misconception regarding acceptable lengths for reasons that are inherently tied to their academic lives: it is deemed less acceptable on the courses they have attended to translate longer excerpts of text or even texts in their entirety, thus inadvertently steering students towards thinking that the opposite must then always be better.

Based on their reflections, students appear to be more tuned into recognising macro level problems with MT, such as picking out suitable text types and text lengths and being aware of issues regarding coherence, cohesion and style, but are less critical and/or aware of more subtle, covert, micro level issues. They often fail to realise that individual words are also tied to their source text context and that inputting them into a translator without it may not always yield the most suitable results. While many students give praise to MT as a good dictionary alternative, none of them stop to ponder or define the key difference between dictionaries and machine translators, i.e. the notable lack of definitions, example sentences or register codes for the words translated in MT. Even when many of the students point out that MT struggles with providing suitable translations for texts with specialised terminology, they still most

popularly use it to translate specifically individual words. Thus, once more, usefulness appears to trump accuracy. In addition, it is not necessarily a given that all MT tools struggle with terminology, as language models may be specifically trained using certain, for example medical, text types, where related vocabulary is heavily present. Students' conceptualisations of MT, then, are mostly defined by their own experiences using free, non-specialised tools.

Some student responses further indicate a difficulty conceptualising the differences between other online language tools and MT, or even what exactly can be considered MT and how it functions. One student, for example, assumes that MT systems are somehow structurally linked to dictionaries from which they pool translations:

Definitely the way to go for individual words, **since it's directly connected to some dictionary**. Some websites even give multiple options for words, which helps with varied wording. (S2409, emphasis added)

Some responses also hint at an emerging tendency for students to link MT systems together with LLM-based generative AIs. When asked to describe MTs, one student notes:

When given specific guidelines, machine translation can produce quite good text. **The longer the text is, the more mistakes AI usually produces**. Machine translation is best used in short texts. (S2416, emphasis added)

“Giving specific guidelines” refers to a prompt given to an AI system when asking it to translate a given text, something which is not possible with conventional MT systems. Still, this student uses the two terms almost interchangeably, as part of one whole. They continue:

It is definitely not suited for long fictional novels, especially of those under fantasy genre. **I think AI has a lot of problems with names. I don't think AI translation of Harry Potter with all the spell names would be that good**. (S2416, emphasis added)

Another student, when asked to discuss MT's weaknesses, also directly discusses AI issues instead:

E.g. **ChatGPT at times uses kind of weird word choices and sentence structures**. I wouldn't use it directly to translate some texts. (S2432, translated from Finnish, emphasis added)

Dorst et al. argue “that the increased visibility of GenAI has not radically changed the way students understand how machine translation works”, based on the characteristics they assign to MT and HT respectively, and they also go on to note that certain responses suggest that “students make a distinction between traditional MT and LLMs” (2025, 67). The responses gathered in my survey, however, point somewhat to the opposite, with most students not being able to make a clear distinction between the two, discussing them interchangeably and even using merged terms such as “AI translation”, thus suggesting that the line between dedicated MT systems and GenAI is blurring.

Several student responses also included some of the other MT and AI-related misconceptions that were examined previously by Salmi et al. (2023, 301), namely with students using humanising language when discussing MT systems and their abilities to “think” and “understand” text and possess intelligence:

I think it is best suited for factual texts, but they shouldn't include too much jargon, because **the machine may not understand** the terms.” (A2414, emphasis added)

You just have to be a bit skeptical towards it as **it tends to misunderstand a lot of things** and translate them incorrectly.” (A2416, emphasis added)

[...] I'd imagine they would be useful when translating longer texts, **if the tool is actually clever enough** to make a good translation [...]” (A2304, emphasis added)

I think it should always be "translated" from the **machine's idea** to what is actually shown forward. **Machines can't often see the context very well** or at all depending on the machine. (A2412, emphasis added)

This is not necessarily an indication of students believing that MT possesses real humanlike intelligence but may in most cases simply demonstrate the lack of exact technical terminology to accurately describe its functions with.

Some students are self-aware of the gaps in their knowledge regarding MT, with especially those with no previous MT experience openly expressing their confusion surrounding the technology, defining it, and having difficulty gauging its strengths and weaknesses:

I think I am a bit confused as of this part of the survey what "machine translation" really means. In general, I think machine translation is not a good way to translate entire texts of really any kind. However, I do think translating specific

terms with an appropriate translator or digital dictionary can be very useful. (A2407, emphasis added)

I honestly cannot say [what are its strengths and what it is good for], at least based on experiences of my own, because I haven't used it. Ever, really. [...] But I'd imagine they would be useful when translating longer texts, if the tool is actually clever enough to make a good translation. Then a human needs to of course find the errors and correct them. I'd say the strengths of machine translation are its speed and effectiveness. It can process an enormous amount of text in a fraction of the time that a human would have to spend on translating it. (A2304, emphasis added)

Students with no experience, despite their doubts, are surprisingly very much in line with the other students in their perceptions of MT, indicating a largely shared level of MT literacy and suggesting the possibility that even those students with more MT use experience may not yet necessarily be more *experienced* users than others.

5 Conclusions

Based on the discoveries made in this study, students' use of MT is above all motivated by a need to find a more flexible alternative for a dictionary. Academically, a vast majority of MT-using students use the technology primarily for translating individual words or shorter phrases, looking for alternative translations or trying to help form new ideas for their own translations based on a rough draft provided by MT. MT is also used to translate foreign language texts in order to understand them. Only a very small minority use –or at least admit to using– MT more extensively than this, translating texts in their entirety and practising post-editing in place of translation proper.

As expected, when it comes to MT literacy, students attending a beginner level translation course appear to grasp only some of the skills described by Bowker & Buitrago-Ciro (2019) and Nurminen (2021). In effect, these are the ones regarding the comprehension of MT's way of processing texts, its strengths and weaknesses, and identifying its most important uses and suitable text types, although examining students in respect to all these areas still shows clear gaps in knowledge. Students' comprehension of the way MT functions is mixed, with some either explicitly expressing their confusion and others having their answers covertly imply that they have not fully grasped the more technical aspects of MT. Many students use humanising language and otherwise inaccurate expressions when speaking of MT, and some appear to have more deeply misunderstood what happens “under the surface” and how exactly an MT system operates, making incorrect assumptions of both its abilities and limitations. In general, students have difficulties distinguishing MT from other CAT tools, especially online dictionaries.

Students present a generally high awareness of MT's pros and cons, except for some more professional and ethical aspects. Students point out many useful purposes for MT, especially giving praise to it as a translator's assistant, helping save time and ease the workload. Many of the benefits named are close to their own lives and reflect their own use purposes. Wider scale reflection is mostly absent from students' responses, likely either denoting the lack of information they yet have of professional translators' work or a lack of its relevance to them personally. The rise of GenAI also adds new dimensions to all MT related research, posing the question of what exactly can be regarded as MT in the eyes of both students and professionals, and likely inevitably leading to a change in definition.

Students display their ability to think critically about which text types and registers are good for MT and which are not, providing relevant explanations for their choices (e.g. the presence of idiomatic expressions, cultural elements, specialised terminology, importance of the translation, et cetera, guiding them). However, their thinking tends to be quite deterministic regarding some issues, such as suitable text lengths, with shorter and less extensive uses of MT near universally being considered better by students. In addition, despite the students' apparently high awareness of MT issues, it does not seem to have a strong impact on their actual MT use: even when the technology is deemed more problematic for certain purposes, students still use it for those as well, often valuing its usefulness over its accuracy.

All in all, students' theoretical MT literacy skills can be said to be moderately good, especially considering their limited education at the time of taking part in this study. However, any assumptions made in this study must be considered critically, as merely the ability to name issues does not equate to the ability to identify similar problems and solve them in real life contexts. Same applies to the opposite: just because a student has not mentioned a certain thing in their answers does not necessarily mean that they are unaware of its existence. Giving participants free word leads to them pointing out the things they personally find most important to note, which is good, as above all, one main goal of this study was to bring the students' personal opinions into light and not strictly grade their skills.

The aim of this thesis was to 1) discover the extent of students' MT use, 2) identify their motivations/purposes for using the technology, and 3) explore students' perceptions, attitudes and feelings regarding MT, all of which the survey was able to cast light on. Lastly, the objective was to discover possible connections or correlations between the students' attitudes towards MT and their ability to recognise MT-related issues. While some estimations can be made by comparing students' answers with their background information, the data from this survey alone cannot provide any definitive answers. An important next step, then, is the evaluation of students' skills by comparing their MT uses and perceptions and the level of literacy implied so far against their actual abilities in practice. Contrasting students' attitudes with their performance in post-editing exercises, for example, may more explicitly reveal if any misconceptions and knowledge gaps they possess have an effect on their success in such tasks. In turn, this will more concretely reveal areas to which more attention should be paid in translation education in the future. After all, MT literacy consists not only of having MT-related knowledge but also of the ability to apply said knowledge in practice: an area which beginner students have less experience with.

Ultimately, this study can serve as a base for such future comparisons and with some adjustments made to the survey –in particular the last section specific to the other stages in my multi-stage study– it may be used with other student groups to gather more data. In the future, including questions dealing with students MT use in GenAI environments especially will be crucial to explore. Further including the opinions of those students who report to have never used MT would be of great importance also, in effect seeking to find why exactly students have or have not chosen to use MT in different contexts. These are all aspects that I intend to examine in the future, starting with the MT error analysis data gathered in the earlier stages of my classroom experiment.

6 Bibliography

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7 Appendices

Appendix 1 - Empty survey base



TURUN YLIOPISTO

BASICS OF TRANSLATION MACHINE TRANSLATION SURVEY

Pakolliset kysymykset merkitty tähdellä (*)

Welcome to the Basics of Translation machine translation survey!

In this survey, we aim to discover how you use and what you think of machine translation. The data we gather here helps us map out teaching needs and hopefully improve translation teaching at the university.

It is important that you answer the questions honestly and according to your own personal opinion. You will not be judged or reprimanded for your answers. This is not a test and will not affect your grading.

The questions will be in English, but you may answer in Finnish as well if that feels most comfortable.

Answering should take about 30-45 minutes. You will have the opportunity to save

your answers as a PDF-file at the end of the survey.

If you have any questions, please email: mekvai@utu.fi

Thank you for participating!

SECTION I - BACKGROUND INFORMATION

1. Enter your full name:

(This will be used to connect your survey answers to the previous stages you've completed, but will be removed from any future publication)

*

2. I am a... *

Major English student

Minor English student (enter your major subject:)

3. How old are you? *

Enter your age:

4. Do you have previous experience with translation and/or post-editing outside of this course? Select all that apply: *

I do NOT have previous translation experience

Experience from a previous translation degree

Experience from working in the field (in a translation company, as a freelancer, etc.). Specify:

Experience from fantranslation, fansubbing, fandubbing, etc.

Experience from other translation courses

Other, specify: _____

SECTION II - MACHINE TRANSLATION USE

These questions will map out your MT tool use.

5. Have you used any machine translation tools/programs before (for any purpose)? *

Yes

No

6. Name the tools/programs you have used: *

7. Which of the following purposes have you used MT for *while doing your assignments for Basics of Translation or other translation tasks*? *

Dictionary alternative / looking up individual words or phrases

Starting point for translating individual sentences or smaller sections of text (getting a rough idea and then editing it)

Translating source texts entirely (with editing afterwards)

Translating source texts entirely (without editing afterwards)

Translating other texts or materials in order to understand them

Other (specify purpose): _____

I have never used MT tools in my assignments

8. Which of the following purposes have you used MT for *outside of translation assignments*? *

Dictionary alternative / looking up individual words or phrases

- Translating foreign language texts (any text type) in order to understand them
- Communicating with someone in a foreign language
- Language learning purposes
- Other (specify purpose): _____
- I have never used machine translation in my free time

9. Do you use machine translation more often from L1 to L2 OR from L2 to L1?

(L1 = Finnish, or your native language / L2= second/foreign language) *

- L1 to L2
- L2 to L1
- About the same amount

10. Do you think you will use machine translation in your academic work or in your free time in the future? *

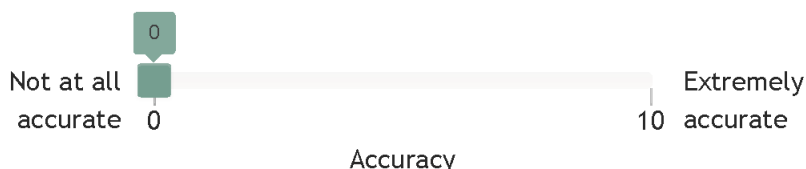
- I will likely use machine translation in my academic work
- I will likely use machine translation in my free time
- I will not use machine translation

SECTION III - OPINIONS ON MACHINE TRANSLATION

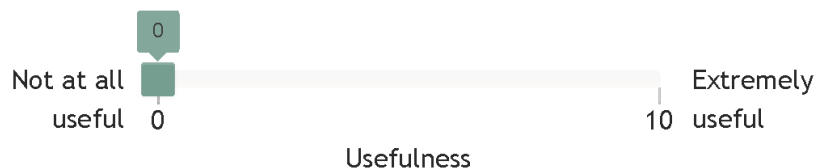
These questions will map out your personal views and opinions on machine translation.

11. How *accurate* do you find machine translation in general?

(When considering accuracy, think of errors and mistakes, fluency, suitability for specific tasks, etc.) *



12. How *useful* do you find machine translation? *



13. What do you think machine translation is good for? What are its strengths? What types of tasks or texts is it best suited for? *

14. What issues do you think machine translation has? What are its weaknesses? What types of tasks or texts is it worst suited for? *

15. Do you think machine translation and translation technology related topics should be featured more in translator teaching? *

- Yes
 No
 I'm not sure

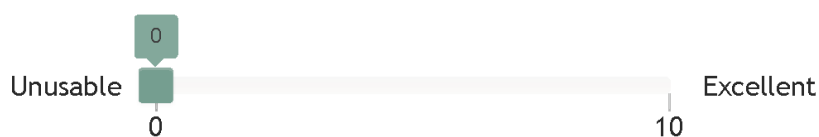
SECTION IV- THEATRE OF CRUELTY

Keep the editing task you did in Stages 1 and 2 in mind while answering these last few questions.

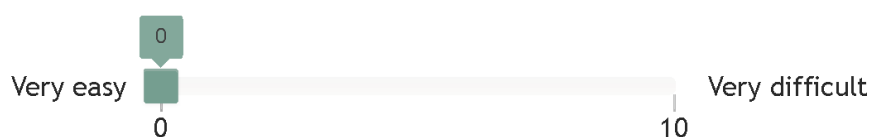
16. Familiarity with Terry Pratchett, *Theatre of Cruelty* and the Discworld series (Choose all that applied BEFORE you took part in the MT tasks. If none apply, feel free to skip this question):

- I am familiar with Terry Pratchett
- I am familiar with the Discworld series
- I've read Discworld novels in **English**
- I've read Discworld novels in **Finnish**
- I've read Discworld novels in another language: _____
- I've read *Theatre of Cruelty* in **English** before taking part in this assignment
- I've read *Theatre of Cruelty* in **Finnish** before taking part in this assignment

17. On a scale from 0-10, how good/bad did you think the machine-translated text was in terms of quality? *



18. On a scale from 0-10, how challenging did you find working on marking and commenting on the translation? *



19. Do you think it would be worth it for a translator to try and post-edit the machine translated version? *

- Yes, I think it would be quite easy and quick
- Yes, but I think it would require a lot of work
- No, I think it would be just be easier to translate it again from the start
- Other (specify): _____

20. Has working on the *Theatre of Cruelty* task changed your views on machine translation in any way? *

Yes

No

21. How have your views changed? *

22. ! Participation in research:

By checking this box, your answers will be excluded from the course assistant's master's thesis research.

Your answers will still be kept and used for purposes of this course.

I do NOT allow my answers to be used in MA thesis research

23. If there is anything else you would like to say/comment on, please write here:

Appendix 2 - Summary in Finnish / Suomenkielinen lyhennelmä

1 Johdanto

Konekääntämisestä ja generatiivisesta tekoälystä (GenAI) on eittämättä tullut pysyvä osa akateemista arkeamme. Tämänhetkisillä käännösalan työmarkkinoilla kyky hyödyntää erilaisia kieliteknologioita tehokkaasti omassa työssään on valttikortti kenen tahansa kääntäjän hihassa – ellei jo jopa aivan välttämätön taito. Vaikka alan ammattilaiset ovat tietoisia sekä teknologian hyödyistä että haitoista, aloittelevien käännös- ja kieltenopiskelijoiden konekäännöslukutaito ei välttämättä ole yhtä harjaantunut. Näin on etenkin, jos konekääntämistä koskeva opetus on suurimmaksi osaksi eristetty osaksi käännösteknologiaa koskevia erikoistumiskursseja, eikä sitä ole laajemmin sisällytetty osaksi opetussuunnitelmaa jo koulutuksen alkeista asti.

Ennen kuin käännöskoulutusta ryhdytään kehittämään, on kuitenkin tärkeää kartoittaa muutostarpeita nimenomaan opiskelijoiden näkökulmasta. Tämän tutkielman tarkoituksena onkin tarkastella, kuinka laajasti ja mihin käyttötarkoituksiin opiskelijat käyttävät konekääntimiä sekä akateemisesti että vapaa-ajallaan. Lisäksi tutkielmassa käsitellään opiskelijoiden suhtautumista konekäännösteknologiaan, sekä heidän käsityksiään sen toiminnasta, tarkkuudesta, hyödyllisyydestä sekä soveltuvuudesta eri käyttötarkoituksiin. Tutkimuksen tavoitteena on selvittää, kuinka tietoisia opiskelijat ovat konekääntimien vahvuuksista ja heikkouksista, sekä onko heidän suhtautumisellaan teknologiaan ja heidän kyvyllään havaita sen ongelmallisuuksia jonkinlainen yhteys. Toiveeni on, että tutkimuksen myötä voidaan paremmin konkretisoida mahdollisia käännösopetukseen tarvittavia muutoksia sekä antaa perusteluita sille, miksi laajamittaisempaa konekääntämistä koskevaa koulutusta tulisi sisällyttää jo opintojen alkuvaiheeseen.

Näiden tavoitteiden saavuttamiseksi pyrin tutkielmassani vastaamaan seuraaviin tutkimuskysymyksiin:

1. Kuinka suuri osa kääntämisen alkeiskurssin opiskelijoista keskimäärin käyttää konekääntimiä tehdessään käännöstehtäviä?
2. Millä tavoin ja mihin tarkoituksiin opiskelijat käyttävät konekääntimiä?
3. Millaisia käsityksiä opiskelijoilla on konekääntämisestä ja niiden vahvuuksista ja heikkouksista, sekä miten he suhtautuvat näihin?

Vastauksien löytäminen näihin kysymyksiin auttaa puolestaan luomaan mahdollisuuksia jatkokutkimuksille sekä toivottavasti lisää nimenomaan opiskelijoihin keskittyvää keskustelua käännösdidaktiikan tutkimuksen alalla.

2 Tutkimuksen teoreettinen pohja

2.1 Konekääntämisen määrittely ja sen piirteet

Gargin ja Agarwalin mukaan konekääntäminen voidaan määritellä prosessiksi, jossa luonnollista kieltä pyritään kääntämään automatisoidusti toiseen kieleen koneistetusti. Tässä tutkimuksessa konekääntimellä viitataan nimenomaan tällä hetkellä käytetyimpiin konekäänninmalleihin eli neuroverkkokonekääntimiin (*neural machine translation*, NMT). Vaikka konekääntimet ovat kehittyneet viimeisen vuosikymmenen aikana merkittävästi, on niillä kuitenkin edelleen omat heikkoutensa.

Konekääntimen tarkkuus, laatu ja näin ollen myös sen hyödyllisyys riippuvat datasteistä, joilla kielimalli on koulutettu. Kääntimet toimivat parhaiten sellaisten kielten välillä, joista koulutusaineistoa (rinnakkaistekstejä ja -käännöksiä) on saatavilla runsaasti. Lisäksi malli, joka on koulutettu vain tietyillä kielillä ei luonnollisesti kykene onnistuneesti kääntämään muita kieliä. Myös koulutusaineistossa mahdollisesti esiintyvät virheet ja asenteellisuudet toistuvat tulevissa käännöksissä, mikä näkyy usein esimerkiksi tiettyjen ammattinimikkeiden käännösten selvänä sukupuolittumisena.

Konekääntimet suoriutuvat heikommin luovien ja monimutkaisten tekstien kääntämisestä, etenkin jos lähtöteksteissä on huumoria, kulttuuriviittauksia, monimerkityksellisiä kohtia tai tyyllillisiä erikoisuuksia. Konekäännin ei myöskään vielä kykene huomioimaan käännöksen toimeksiantoa, kohdeyleisöä, mahdollisia lokalisointitarpeita tai muita spesifikaatioita. Tulevaisuudessa (ja jo nyt) generatiivinen tekoäly saattaa kuitenkin mahdollistaa joidenkin näiden ongelmien ratkaisemisen.

Ongelmistaan huolimatta konekääntämisellä on omat etunsa. Kääntimet ovat nopeita, helposti saavutettavissa, suhteellisen tarkkoja ja suurimmaksi osaksi ilmaisia. Ohjelmia voi käyttää helposti kuka tahansa, jolla on internetyhteys ja pääsy älylaitteeseen, jopa sellainen henkilö, jolla ei ole minkäänlaista kääntämiseen liittyvää kokemusta. Konekäännin voi edesauttaa kielenoppimista, avustaa kommunikoinnista, toimia sanakirjan korvikkeena tai auttaa yleisesti vieraiden kielten ymmärtämisessä.

2.2 Konekääntäminen kääntäjänkoulutuksessa

Vuosien 2024 ja 2025 Euroopan kieli- ja käännösalaan käsittelevän, *European Language Industry Survey* -kyselyiden mukaan markkinoiden merkittävimpien trendien kärjessä ovat viime vuosina olleet tekoäly ja konekääntäminen. Vuoden 2025 kyselyssä yli puolet ammattikäntäjistä ilmoitti käyttävänsä näitä teknologioita omassa työssään. Tarjoamalla opiskelijoille kieli- ja käännösteknologiaa koskevaa koulutusta ei ole ainoastaan eettistä merkitystä vaan myös kriittinen asema valmistellessa heitä työmarkkinoille, jossa arki on aina vain entistä teknologisoituneempaa ja kilpailu kovempaa.

Konekääntämisestä ja käännösteknologiasta on tullut merkittävä osa käännöskoulutusta. Usein teknologiaa koskeva opetus on kuitenkin sijoitettu yksittäisiin, aiheeseen erikoistuneisiin kursseihin. Viime aikoina useat tutkijat ovat kuitenkin ottaneet asiaan kantaa, ja argumentoineet teknologiakoulutuksen laajemman integroinnin puolesta.

Eurooppalaisessa kontekstissa, johon myös oma tutkimukseni sijoittuu, käännösopetuksen suuntauksiin vaikuttavat kuitenkin laajalti itse yliopistoja korkeammat tahot, kuten EU. *European Master's in Translation* -neuvosto (EMT) asettaa kääntäjänkoulutukselle tietyt standardit, esimerkiksi määrittelemällä tietyt kompetenssit, jotka jäsenyliopiston maisterintutkinto-ohjelmasta valmistuvan kääntäjän tulee opintojensa lopuksi hallita. EMT:n asettamat kriteerit saattavat osaltaan vaikuttaa teknologiakoulutuksen sijoittumiseen opinnoissa. Koska EMT-tutkinto-ohjelmat ovat aina maisteritason koulutuksia, ei EMT-kompetensseissa määriteltyjä konekääntämiseen liittyviä taitoja välttämättä haluta opettaa aiemmissa opinnoissa, mm. opetussuunnitelmaan syntyvän toiston vuoksi.

Myös EMT:n teknologiakompetenssien epämääräisyyttä on ajoittain kritisoitu (esim. Salmi et al 2023). Opiskelijan tulisi niiden mukaan “kyetä käyttämään nykyistä ja tulevaa käännösteknologiaa sekä ymmärtää konekääntämisen perusteet ja osata soveltaa niitä mahdollisiin eri tarpeisiin”. Varsinaisia perusteita ja mitä ne käytännössä tarkoittavat, ei kuitenkaan ole tarkemmin määritelty, jolloin opetuksen sisältö voi jäädä jokaisen jäsenyliopiston omaksi päätettäväksi. Määrittelyiden epämääräisyydellä voi luonnollisesti olla vaikutus sekä opiskelijoiden oppimiseen että heidän osaamisensa arviointiin.

2.3 Konekäännöslukutaito

Yksi mahdollinen tapa arvioida opiskelijoiden konekääntämistä koskevaa osaamista on tarkastella heidän konekäännöslukutaitoaan (*machine translation literacy*). Tämä alun perin

Bowkerin ja Buitrago Ciron (2019) ideoima käsite, jota Nurminen (2021) on myöhemmin muokannut, käsittää valikoiman erilaisia taitoja, jotka konekääntimen vastuullisen käyttäjän tulisi hallita. Tiivistettynä nämä koskevat käyttäjän kykyä ymmärtää sekä konekääntimen toiminnan periaatteet että sen hienovaraisemmat piirteet, tunnistaa sen vahvuudet ja heikkoudet, nimetä sopivat ja epäsoyvät tavat soveltaa teknologiaa eri tarkoituksiin, osata arvioida ja muokata konekäännettyä tekstiä, sekä muutoin sisällyttää konekääntämistä osaksi omaa työnkulkuaan.

Hyvät konekäännöslukutaidot omaava henkilö kykenee käyttämään konekääntimiä tehokkaasti, mukautuvasti ja eettisesti. Opiskelijoiden konekäännöslukutaidon ja siinä esiintyvien puutteiden tarkastelu puolestaan voi auttaa paikantamaan osa-alueita, joissa opetusta tulisi lisätä, tehostaa tai muokata.

2.4 Aiempi opiskelijoita ja konekääntimiä koskeva tutkimus

Konekääntimien käyttöä koskeva tutkimus on aiemmin keskittynyt laajalti ammattikäntäjiin, etenkin kaunokirjallisuuden käntäjiin, ja opiskelijoiden rooli on puolestaan jäänyt jokseenkin taka-alalle. Viime aikoina teknologian asemaa käännöskoulutuksessa on kuitenkin alettu huomioida laajemmin, ja tämän myötä myös opiskelijoiden kokemuksia ja ajatuksia on alettu ottaa paremmin esille. Käännös- ja kieltenopiskelijat ovat esiintyneet tutkittavina etenkin erilaisissa opetuskokeiluja käsittelevissä tapaustutkimuksissa (esim. Pastor 2021, Valijärvi & Tarsoly 2019 ja Briggs 2018).

Tutkimuksissa on käsitelty sekä opiskelijoiden käsityksiä konekääntimistä että kartoitettu kääntimien käytön laajuutta, käyttötarkoituksia sekä -kokemuksia. Salmi et al (2023) sekä Dorst et al (2025) selvittivät tutkimuksissaan erilaisia piirteitä, joita opiskelijat yhdistävät kone- ja ihmiskääntämiseen. Heidän mukaansa opiskelijat liittävät konekääntämiseen nopeuden, virheiden tekemisen, mekaanisen toiminnan, todennäköisyyksien hyödyntämisen, kirjaimellisesti kääntämisen, aina samalla tavalla kääntämisen sekä logiikan käyttämisen. Yksinomaan ihmiskääntämisen piirteinä opiskelijat pitävät luovuutta, kohdeyleisön ja -tilanteen huomioimista, merkitysten ymmärtämistä, yleismaailmallista tietoa, sekä tunteiden, kognition ja persoonallisuuden omaamista.

Pastor (2021), Valijärvi & Tarsoly (2019) ja Briggs (2018) puolestaan tutkivat konekääntimien käyttöä käytännössä, opiskelijoiden käyttökokemusten näkökulmasta. Tutkimuksista ilmenee, että konekääntimien käyttöaste opiskelijoiden keskuudessa on vaihtelevaa: kieltenopiskelijat hyödyntävät teknologiaa enemmän kuin varsinaiset käännöstieteen opiskelijat.

Pastorin tutkimuksessa opiskelijat käyttivät mieluiten sellaisia konekääntimiä, jotka soveltuvat sanakirjamaiseen, yksittäisten sanojen tai lyhyempien tekstikatkelmien kääntämiseen. Lisäksi opiskelijat vertailevat omia käännöksiään konekäännökseen tarkistaessaan töitään. Opiskelijoiden suhtautuminen teknologiaan ilmenee tutkimuksissa positiivisena, etenkin jos he ovat saaneet ohjeistusta sen käyttöön. Myös opiskelijoiden mainitsemat konekääntämisen suurimmat hyödyt ovat tutkimuksissa usein samat: nopeus ja saavutettavuus toistuvat vastauksissa.

Aiemmasta tutkimuksesta huolimatta nimenomaan opiskelijoiden käännöslukutaidon perinpohjaisemmalle tarkastelulle on edelleen tarvetta. Konekääntimien käytön levinneisyyttä ja teknologiaan suhtautumista on mitattu tapaustutkimuksissa, mutta laajempaa ja yleistettävää tutkimusta olisi vielä hyvä toteuttaa lisää. Käytännössä tämä tarkoittaa aiempien tutkimusmenetelmien yhdistämistä toisiinsa, suurempien ja useampien tutkittavien ryhmien tarkastelua sekä tulosten vertailua edeltävien tutkimusten kanssa.

3 Tutkimuksen konteksti ja metodit

3.1 Tutkimuksen rakenne ja tutkittavat

Tässä tutkimuksessa tutkittavina toimivat 111 kääntämisen alkeiskurssin (suomi–englanti) opiskelijaa Turun yliopistosta, jotka osallistuivat vuosina 2023–2024 opetuksen aikana järjestettyihin tehtäväkokeiluihin. Aineistoa kerättiin kurssin kolmelta eri toteutuskerralta, jotta osallistujien määrä olisi suurempi ja tulokset näin ollen paremmin yleistettävissä. Osallistujia oli 2023 syksyllä 39 opiskelijaa, 2024 keväällä 38 opiskelijaa ja 2024 syksyllä 34 opiskelijaa.

Jokaisen tehtäväkokeilun kahdessa ensimmäisessä vaiheessa opiskelijat analysoivat, ensin luokassa ja sitten kotonaan, konekäännettyä novellia, sekä poimivat ja kommentoivat tekstissä esiintyviä virheitä. Kolmannessa vaiheessa he vastasivat kyselyyn, joka toimii tämän tutkielman fokuksena. Kokeiluja varten luomassani kyselyssä opiskelijoita pyydettiin kertomaan, mitä konekäännöstyökaluja he käyttävät/ovat käyttäneet, mihin tarkoituksiin, mitä mieltä he ovat kääntämisestä sekä kuinka he arvostelisivat niitä erilaisilla asteikoilla. Opiskelijoiden tuli myös nimetä mielestään konekääntämiseen sopivia käyttötarkoituksia ja tekstityyppejä sekä kertoa omin sanoin kääntimien vahvuuksista ja heikkouksista. Lisäksi opiskelijoilta pyydettiin arvioimaan konekääntimien käyttöään tulevaisuudessa sekä ilmaisemaan suhtautumisensa teknologiaopetuksen lisäämisen.

Vaikka tutkimuskokeilun aikana suoritettavat tehtävät olivat kurssilla pakollisia suorituksia, tutkittavilla oli mahdollisuus kieltää heidän vastauksiensa käsittely tämän tutkielman

analyysissä ja diskussiossa. Lopulta kuitenkin vain yksi opiskelija kielsi vastauksiensa käytön, joten tällä ei ole merkittävää vaikutusta tuloksiin. Kaikki tutkittavat ovat vastanneet kursseilla tehtäviin omalla nimellään, jotta eri vaiheet voitiin liittää toisiinsa ja suorituksista voitiin pitää kirjaa, mutta tässä tutkielmassa heidän henkilöllisyytensä on täysin anonymisoitu. Kun opiskelijoiden vastauksia lainataan suoraan, käytetään heidän nimiensä sijaan yksilöityjä, lukukausiryhmästä, aineistonkeruuvuodesta sekä yksilönumerosta muodostuvia koodeja (esim. A2216).

Suurin osa (73,9 %) 111:sta tutkittavasta on kielten ja käännöstieteiden laitoksen englannin kielen pääaineopiskelijoita. Loput vähän yli neljäsosa ovat englannin kielen sivuaineopiskelijoita, pääaineinaan muun muassa muut kielet, kasvatustiede, folkloristiikka ja kirjallisuudentutkimus. Kolmesta tutkittavasta ryhmästä kevättryhmässä (S2024) oli eniten sivuaineopiskelijoita (45 %) ja syysryhmissä kummassakin (A2023, A2024) vain noin kymmenesosa. Tutkittavat ovat 18—48-vuotiaita, ja heidän keski-ikänsä on 22. Tutkimuksessa ei otettu huomioon tutkittavien sukupuolta tai muita määritteleviä piirteitä.

Ennen tutkimusta opiskelijat olivat kurssilla osallistuneet yhdelle käännösteknologiaa käsittelevälle luennolle, jonka myötä heillä voidaan olettaa olevan vähintään jonkinlainen peruskäsitys konekääntimien toiminnasta sekä mihin tarkoituksiin ne soveltuvat ja eivät sovellu. Lisäksi opiskelijoita ohjattiin tutustumaan omalla ajallaan kurssinalustalla oleviin käännösteknologiaa käsitteleviin materiaaleihin. 39 %:lla tutkittavista on jonkinasteista kokemusta kääntämisestä alkeiskurssille osallistumisen lisäksi: 14 % oli osallistunut jollekin muulle käännöskurssille, 14 % oli harrastanut fanikääntämistä, 5 % oli työskennellyt freelancerina tai muunlaisena kielipalvelujentarjoajana käännösyrityksessä, ja 12 %:lla oli kokemusta muunlaisesta käännöstoiminnasta, esimerkiksi perheelle tai kavereille kääntämisestä tai tulkkauksesta.

3.2 Analyysimetodit ja täydentävä data

Tutkimuksen keskiössä oleva kysely koostuu sekä monivalinta- ja Likert-asteikkokysymyksistä, joiden vastauksia analysoidaan pääosin määrällisesti, että avoimista kysymyksistä, joita puolestaan tarkastellaan laadullisesti. Opiskelijoiden vastauksia analysoidessa ei käytetä minikäänlaista valmista luokittelua. Sen sijaan vastauksia tarkastellaan temaattisesti ja aineistosta pyritään nostamaan esille siinä mahdollisesti ilmeneviä trendejä, joita voidaan tutkia laajemmin tulevaisuudessa. Silloin kun se on mahdollista (ja oleellista), tuloksia vertaillaan aiempiin opiskelijoiden konekääntimien käyttöä käsitteleviin tutkimuksiin. Lisäksi opiskelijoiden tietoja ja taitoja verrataan Nurmisen määrittelemiin hyvän konekäännöslukutaidon piirteisiin, muttei arvioida numeerisesti.

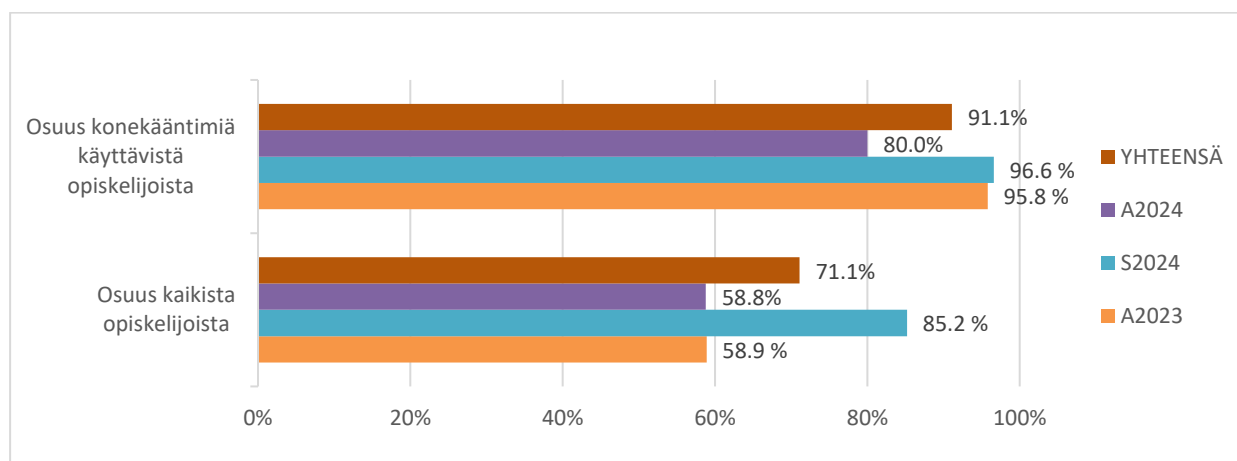
Tutkimuksen täydentävänä aineistona ja vertailun kohteena käytetään samalla alkeiskurssilla aiemmin tehtyjä itsearviokyselyitä. Tämä koskee kuitenkin vain yhtä kysymystä, jossa opiskelijoita pyydettiin ilmoittamaan kaikki käännoistöissä hyödyntämänsä käännoistyökalut ja tiedonlähteet.

4 Analyysi ja tulokset

4.1 Miten opiskelijat käyttävät konekääntimiä

Kyselyn perusteella noin 71,2 % opiskelijoista on käyttänyt konekääntimiä aiemmin johonkin tarkoitukseen. Eniten käytetyt ohjelmat ovat *Google Translate* (68 mainintaa) ja *DeepL* (18 mainintaa). Muita opiskelijoiden käyttämiä ohjelmia ovat mm. *Papago*, *Mtool*, *Yandex*, *Sugoi translator*, *Microsoft Word translator* ja *jisho.org*. Opiskelijoiden vastaukset tuovat ilmi vaikeuden erottaa konekääntimet internetsanakirjoista sekä generatiivisesta tekoälystä: vastauksissa erilaiset sanakirjat on mainittu yhteensä 41 kertaa ja *ChatGPT*-tekoälysovellus 12 kertaa. Näin ollen internetsanakirjat nousevat virheellisesti toiseksi suosituimmaksi ”konekääntimeksi” ja myös tekoälyllä on kasvava merkitys tavanomaisten konekäänninohjelmien rinnalla.

Kuvio 1: Opiskelijoiden konekääntimien käyttö akateemisissa yhteyksissä



Keskimäärin 71,1 % kaikista opiskelijoista on hyödyntänyt konekääntimiä akateemisia käännoštehtäviä tehdessään (Kuvio 1). Osuus on korkeampi kevään ryhmässä, jossa yli 40 % osallistujista on sivuaineopiskelijoita, kun taas syksyn ryhmissä osuudet ovat liki samat. Konekääntimien käyttöasteet ovat korkeammat kuin mitä opiskelijat raportoivat aiemmissä kurssin itsearviokyselyissä (38,9–47,4 %) eivätkä ne myöskään ole täysin yhteneviä muissa tutkimuksissa havaittuihin käyttöasteisiin. Lähimpänä arvot ovat vuoden 2024 *European language industry survey* -kyselyn tuloksia (56–58 %).

Akateemisissa konteksteissa opiskelijat käyttävät konekääntimiä ylivoimaisesti eniten sanakirjan korvikkeena (83,5 % käyttäjistä), käytännössä yksittäisten sanojen tai fraasien kääntämiseen sekä vaihtoehtoisten käännösratkaisujen etsimiseen. Lisäksi opiskelijat hyödyntävät konekääntimiä etsimällä ideoita ja inspiraatiota omiin käännöksiinsä koneen luoman raakaversioiden pohjalta (46,8 % käyttäjistä). Vajaa neljäsosa konekääntimiä käyttävistä opiskelijoista hyödyntää teknologiaa lisäksi muiden tekstien ymmärtämisen tukena. Vain hyvin pieni osa opiskelijoista myöntää käyttävänsä konekääntimiä tätä laajemmin, esimerkiksi kokonaisten tekstien kääntämiseen. Kukaan opiskelijoista ei ilmoita käyttävänsä konekääntimiä arvioimatta tai editoimatta lainkaan sen tuottamaa tekstiä jälkeensä.

Opiskelijat käyttävät myös vapaa-ajallaan konekääntimiä eniten sanakirjan korvikkeena (87,3 % käyttäjistä). Lisäksi he hyödyntävät konekääntimiä vieraskielisten tekstin ymmärtämiseen (82,3 %), kielenoppimistarkoituksiin (64,6 %) sekä kommunikoimiseen sellaisissa tilanteissa, joissa eri osapuolilla ei ole yhteistä kieltä (50,6 %). Yksittäiset opiskelijat käyttävät konekääntimiä myös muihin tarkoituksiin, kuten fanikääntämiseen.

Vähän yli puolet opiskelijoista ilmaisee käyttävänsä konekääntimiä tasapuolisesti sekä vieraasta/toisesta kielestä omaan äidinkieleensä päin (L2–L1) että päinvastoin (L1–L2). 29,1 % käyttää kääntimiä enemmän L2–L1-suunnassa, todennäköisesti tekstien ja/tai yksittäisten sanojen ymmärtämiseen ja tulkitsemiseen, ja 7,7 % taas enemmän L1–L2-suunnassa, todennäköisesti tuottaessaan käännöksiä tai muuta vieraskielistä tekstiä.

Tämänhetkisen ja aiemman käytön lisäksi opiskelijoita pyydettiin arvioimaan todennäköistä konekääntimien käyttöään tulevaisuudessa. 30,6 % opiskelijoista aikoo todennäköisesti käyttää konekääntimiä pelkästään vapaa-ajallaan, 12,6 % pelkästään akateemisesti ja 46,8 % molemmissa yhteyksissä. 9,9 % ilmoittaa, ettei aio lainkaan käyttää konekääntimiä. Opiskelijoiden oman arvion perusteella konekääntimien käyttö tulee vähenemään vapaa-ajalla ja kasvaamaan akateemisesti. Yleisesti ottaen käyttäjien määrä suurenee ja käyttäjäkunnassa tapahtuu rakennemuutos: ne, jotka nyt hyödyntävät teknologiaa ottavat etäisyyttä teknologiaan, kun taas ne, jotka eivät tähän mennessä ole olleet käyttäjiä aikovat tutustua siihen. Kuvio 2 alla kuvaa ryhmien välistä muutosta:

Kuvio 2: Konekääntimien käyttö nyt ja tulevaisuudessa (opiskelijoiden oma arvio)

KÄYTTÖTYYPPI	NYKYINEN KÄYTTÖASTE (opiskelijoiden raportoima)		TULEVA KÄYTTÖASTE (opiskelijoiden arvioima)	
Vapaa-aika	79/111 opiskelijoista	71,2 %	86/111 opiskelijoista	77,4 %
Akateeminen	71/111 opiskelijoista	63,9 %	66/111 opiskelijoista	59,4 %
Ei käytä	32/111 opiskelijoista	28,8 %	11/111 opiskelijoista	9,9 %

Opiskelijoilta kysyttiin myös, tulisiko heidän mielestään konekääntämistä ja käännösteknologiaa koskevaa opetusta lisätä käännöskoulutuksessa. Vastaajista 38,2 % on opetuksen lisäämisen puolella ja vain 3,6 % sitä vastaan. 58,2 % ilmaisee, etteivät ole varmoja asiasta. Yleinen mielipide vaikuttaa kuitenkin olevan opetuksen lisäämiselle avoin.

4.2 Opiskelijoiden käsitykset ja suhtautuminen konekääntimiin

4.2.1 Tarkkuuden ja hyödyllisyyden arviointi

Opiskelijat arvioivat konekääntimien tarkkuutta (accuracy) ja hyödyllisyyttä (usefulness) asteikolla 1–10. Tehtävänä oli arvioida konekääntimiä yleisesti, eikä mitään tiettyä ohjelmaa tai työkalua. Tarkkuudessa konekääntimen arvosana oli keskiarvoltaan 4.6, hyvin lähellä janan keskipistettä. Yksikään opiskelija ei antanut konekääntimille kaikkein alinta tai ylintä arvosanaa, mutta arviot kallistuivat matalampaan päin: vain 10 % opiskelijoista arvioi konekääntimen tarkkuuden korkeammalle kuin 7/10. Hyödyllisyydessä konekääntimet saivat jonkun verran korkeampia arvosanoja, jopa kaksi täyttä kymmentä, ja sen keskiarvoksi määrittyi 6.2. Vaikka opiskelijat pitävät konekäännösten laatua suurimmaksi osaksi keskinkertaisena, mieltävät he silti teknologian hyödylliseksi. Tarkkuuden korkeammalle arvioineet opiskelijat antoivat myös yleisesti korkeampia arvioita konekääntimien hyödyllisyydelle, mutta tämä yhteys ei kuitenkaan ole yksiselitteinen. Esimerkiksi muutama opiskelija, joka arvioi tarkkuuden hyvin matalalla arvosanalla 3, antoi kuitenkin hyödyllisyyden arvosanaksi 10.

4.2.2 Opiskelijoiden ajatuksia konekääntimien vahvuuksista ja heikkouksista

Kyselyn loppupuolella opiskelijat vastasivat avokysymyksiin, jossa heidän tuli pohtia konekääntimien hyötyjä ja haittoja, vahvuuksia ja heikkouksia sekä sopivia käyttötarkoituksia, -tilanteita ja yleisesti konekääntämiseen soveltuvia tekstityyppejä. Vahvuuksia pohtiessaan

opiskelijoiden vastauksissa korostuvat teknologian käytännöllisyys ja sen kyky prosessoida tekstiä tehokkaasti. Opiskelijoiden silmissä konekääntimen ensisijainen vahvuus on sen nopeus ja tuotannollisuus. Opiskelijat kuvaavat konekäännintä ajansäästäjänä, joka helpottaa käyttäjän työtaakkaa ja kykenee prosessoimaan valtavia tekstimassoja silmänräpäyksessä. Konekäännin ei ole myöskään vain itse nopea, vaan tekee myös sen käyttäjästä nopeamman, kun tämä pystyy siirtämään manuaalista työtä koneelle eikä tämän tarvitse esimerkiksi palkata kääntäjää tekemään työtä. Nopeuden lisäksi opiskelijat pitävät konekäännintä myös helposti saavutettavana (accessible). Saavutettavuudella he viittaavat todennäköisimmin siihen, että ohjelmat ovat helposti ja ilmaiseksi saatavilla, eikä niinkään niiden varsinaiseen helppokäyttöisyyteen. Toisaalta vain yksi opiskelija mainitsee suoraan konekääntimien rahalliset edut ja kehuu niiden olevan halpoja käyttää.

Opiskelijat antavat lukuisia esimerkkejä mielestään konekääntämiseen hyvin soveltuvista käyttötarkoituksista ja tekstityypeistä. He uskovat konekääntimien soveltuvan parhaiten yksittäisten sanojen, termien ja fraasien kääntämiseen, mikä näkyy myös heidän omassa teknologian käytössään. Konekääntimistä voi etsiä synonyymejä ja vaihtoehtoisia käännöksiä omille ehdotuksilleen. Lisäksi konekäännintä voi käyttää ymmärtääkseen uusia vieraskielisiä sanoja tai muistuttaakseen itseään sellaisten sanojen merkityksistä, jotka jo tuntee, mutta on unohtanut. Konekäännös voi myös toimia pidemmissä osioissa luonnoksena ja oman käännöksen raakaversiona sekä auttaa saamaan peruskäsityksen vieraskielisen tekstin sisällöstä.

Opiskelijoiden mielestä konekääntämiseen soveltuvimmat tekstit ovat sisällöltään ja rakenteiltaan yksinkertaisia ja lyhyitä tekstejä, jotka ovat kieleltään yleismaailmallisia, selkeitä, standardisoituja ja tavanomaisia. Tekstien tulisi myös olla sellaisia, jotka eivät ole kovinkaan tärkeitä tai joissa mahdollisilla virheillä ei ole merkittävää vaikutusta tekstin ymmärtämiseen eivätkä ne johda seuraamuksiin oikeassa elämässä. Opiskelijoiden antamiin konkreettisiin esimerkkeihin kuuluvat muun muassa julkaisut sosiaalisessa mediassa, kuvatestit, nettisivut, blogit, sähköpostit, viestit, keskustelut, tekniset tekstit, ohjekirjat sekä ruokalistat.

Opiskelijat tunnistavat ja nimeävät myös monia konekääntämisen ongelmakohtia. Päälimmäisenä opiskelijat huomioivat, ettei konekääntimellä ole kykyä ”ymmärtää” tekstin tai ilmaisun kontekstia eikä mahdollisia konnotaatioita tai muita tekstin erilaisia hienovaraisuuksia. Opiskelijoiden mielestä konekääntimet kääntävät liian suoraan, kirjaimellisesti ja sanasta sanaan, eivätkä ne usein osaa kääntää oikein monimerkityksisiä ilmaisuja. Lisäksi opiskelijat mainitsevat, että konekääntimellä on vaikeuksia tuottaa yhteneväistä tekstiä eikä se ota huomioon

kohdeyleisöä. Opiskelijat toteavat, ettei konekäännin sovellu hyvin pitkiin eikä monimutkaisiin teksteihin tai lauseisiin. He tietävät, että konekääntimellä on vaikeuksia eritoten luovien tekstien kanssa ja etenkin sellaisten tekstien, joissa on paljon kulttuuriviittauksia, idiomaattisia ilmaisuja, erisnimiä tai erikoistunutta terminologiaa. Konekäännin ei myöskään osaa jäljentää lähtötekstin tyyliä. Huonoimmin konekääntämiseen soveltuvia tekstityyppejä ovat opiskelijoiden silmissä lakitekstit, lääketieteelliset ja muut tieteelliset tekstit, esseet, hallinnolliset tekstit sekä erilaiset kaunokirjalliset tekstit kuten romaanit, runot ja laulujen sanoitukset.

Jotkut opiskelijat ovat myös jyrkemmin sitä mieltä, etteivät konekääntimet sovellu minäkäänlaiseen kääntämiseen ilman ihmisen puuttumista prosessiin. Heidän mukaansa kaikki konekääntimen tuottama teksti tulee aina tarkistaa muita lähteitä vasten. Toisten opiskelijoiden suhtautuminen konekääntimien kehitykseen on puolestaan hyvin positiivinen. Eräs opiskelija muun muassa uskoo, että tulevaisuudessa tekoälyn kehitys mahdollistaa tämänhetkisten konekääntimien ongelmien ratkaisun.

5 Tulokset ja johtopäätökset

Tässä tutkielmassa tehtyjen päätelmien perusteella voidaan todeta, että oppilaiden konekäännöksen käyttöä motivoi ennen kaikkea tarve löytää joustavampi vaihtoehto sanakirjoille. Sekä akateemisissa tilanteissa että vapaa-ajallaan suurin osa konekääntimiä käyttävistä opiskelijoista käyttää ohjelmia ensisijaisesti yksittäisten sanojen tai lyhyempien lauseiden kääntämiseen, vaihtoehtoisten käännösratkaisuiden etsimiseen tai omien käännöstensä ideoimiseen koneraakäännöksen pohjalta. Lisäksi opiskelijat hyödyntävät konekäännöksiä vieraskielisen tekstin ymmärtämiseen. Vain harva opiskelija myöntää käyttävänsä teknologiaa tätä laajemmin, esimerkiksi kokonaisten käännöstehtävien kääntämiseen.

Opiskelijoiden konekäännöslukutaidon voidaan kyselyn perusteella katsoa kattavan vain jotkin Bowker & Buitrago Ciron ja Nurmisen määrittelemistä osaamisalueista. Käytännössä nämä ovat kyky ymmärtää konekääntimen tapaa prosessoida tekstejä, kyky nimetä konekääntimen vahvuudet ja heikkoudet, sekä kyky tunnistaa sen keskeiset käyttötarkoitukset ja valita sopivat tekstityypit. Kaikissa näissä taidoissa esiintyy kuitenkin vielä puutteita. Opiskelijoiden kyky hahmottaa konekääntimien toimintaa on vaihteleva: jotkut kertovat avoimesti hämmennyksestään, kun taas toisten vastaukset antavat epäsuorasti ilmi, etteivät he vielä ole ymmärtäneet joitain teknologian teknisiä piirteitä täysin oikein. Monet opiskelijat käyttävät konekääntimistä inhimillistä kieltä ja pohdiskelivat sen ”älykkyyttä” tai kykyä ”ajatella”. Opiskelijoilla on myös vaikeuksia erottaa konekääntäminen muista teknologioista, etenkin

internetsanakirjoista sekä generatiivisesta tekoälystä. Paikoitellen opiskelijoiden vastauksissa nämä eri työkalut esiintyvät jopa toistensa synonyymeinä.

Opiskelijat osaavat nimetä monia konekääntimien vahvuuksia ja heikkouksia, mutta eri ominaisuudet rajoittuvat pääosin heidän omiin kokemuksiinsa teknologian käyttäjinä. Eettiset ja yhteiskunnalliset piirteet puuttuvat lähes täysin opiskelijoiden vastauksista, eivätkä he pysähdy pohtimaan konekäännösteknologian merkitystä laajemmin ammattikäytäntöjen elämässä, yleisesti työmarkkinoilla. Esille eivät nouse esimerkiksi teknologian mahdolliset negatiiviset vaikutukset kääntäjän työn arvostukseen tai käännöstöistä maksettuihin palkkioihin. Joko opiskelijat eivät ole tietoisia näistä asioista, tai ne eivät ole tällä hetkellä heille merkityksellisiä. Sen sijaan monet heidän huomionsa koskevat ensisijaisesti konekäännöksiä välittömiä, esimerkiksi tehokkuuteen liittyviä hyötyjä sekä erilaisia mahdollisia laadun puutteellisuksia.

Opiskelijat tunnistavat hyvin konekääntämisen vahvuuksia ja ongelmakohtia makrotasolla, mutta heikommin mikrotasolla. Opiskelijoiden ajattelutapa on usein sangen mustavalkoinen, etenkin tulkitessaan, että konekäännin kääntää lähes aina lyhyet ja yksinkertaiset tekstit hyvin ja pitkät ja monimutkaiset tekstit huonosti, ajattelematta tarkemmin yksittäistenkin sanojen mahdollista ongelmallisuutta tietyissä käännöstilanteissa. Koska opiskelijoiden on helppompaa havaita esim. terminologiaan ja koheesioon liittyviä virheitä ja ongelmia pidemmistä teksteistä, näyttäytyvät nämä tekstit hankalampina kuin lyhyet, jotka puolestaan voivat hämätä kääntämiseen harjaantumaton opiskelijaa.

Kaiken kaikkiaan opiskelijoiden konekäännöslukutaito on kuitenkin suhteellisen hyvä, etenkin ottaen huomioon sen, että heidän saamansa konekäännöskoulutus oli ennen tutkimukseen osallistumista hyvin suppeaa. Tässä tutkielmassa esitettyihin tuloksiin on kuitenkin suhtauduttava kriittisesti, sillä pelkkä kyky nimetä ongelmia ei vielä kerro opiskelijoiden kyvystä ratkaista niitä oikeassa elämässä. Myöskään jos opiskelija on jättänyt vastauksestaan jonkin tietyn asian mainitsematta ei välittömästi tarkoita, ettei hän ole lainkaan tietoinen asiasta. Avokysymyksiin vastatessaan opiskelijat nostavat esille juuri itselleen merkityksellisimmät asiat, ja tämä opiskelijoiden omien mielipiteiden esille tuominen onkin yksi tutkimukseni päätavoitteista.

Tämän pro gradu -tutkielman pyrkimyksenä oli kartoittaa konekääntimien käytön laajuutta opiskelijoiden keskuudessa, selvittää mihin tarkoituksiin he käyttävät tätä teknologiaa, sekä tarkastella heidän käsityksiään ja suhtautumistaan konekääntämiseen. Uskon toteuttamani kyselyn laajalti vastanneen näihin kysymyksiin. Toiveena oli lisäksi ottaa selvää, onko

opiskelijoiden asenteilla ja heidän kyvyillään tunnistaa konekääntämisen ongelmakohtia jonkinlainen yhteys. Vaikka kyselyvastauksien pohjalta voidaan tehdä joitain oletuksia ja arveluita, eivät ne kuitenkaan voi vielä yksinään tuottaa tyhjentäviä tuloksia. Seuraava tärkeä askel onkin täten vertailla opiskelijoiden kyselystä ilmenevää konekäännöslukutaidon tasoa heidän kykyihinsä käytännössä, esimerkiksi tutkimalla heidän suoriutumistaan erilaisissa jälkiedittävissä. Näin voidaan saada selville tarkempaa tietoa opiskelijoiden konekäännöstaidoista ja paikantaa sellaisia osaamisalueita, joita koskevaa opetusta tarvitsee lisätä tai muutoin tehostaa.

Toteuttamani tutkimus voi toimia pohjana tällaisille tuleville vertailuille, ja tekemällä kyselyyn joitain muutoksia, voidaan sitä soveltaa myös toisiin opiskelijaryhmiin mahdollisen tarvittavan lisäaineiston keräämistä varten. Koska raja eri teknologioiden välillä alkaa olla hiipuva, tulevaisuudessa on äärimmäisen tärkeää lisätä kyselyihin kysymyksiä, jotka kartoittavat tarkemmin nimenomaan tekoälyn käyttöä konekääntämisen välineenä. Lisäksi on tärkeää tuoda entistä enemmän esille ajatuksia juuri niiltä opiskelijoilta, jotka eivät ole koskaan käyttäneet konekääntimiä, ja löytää tarkempia perusteluja sille, miksi opiskelijat haluavat tai eivät halua käyttää kääntimiä. Aion tulevaisuudessa paneutua näihin puutteisiin omassa tutkimustyössäni, alkaen opetuskokeiluni virheanalyysitehtävien tarkastelusta.