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CADERNOS de TRADUÇÃO

Online terminology resources in medical translation: Practices and perceptions among students and professional translators

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Abstract: The internet and the online resources it provides are essential tools for modern translation practice. In the ever-evolving field of medical translation, using these tools appropriately is especially important when sourcing suitable equivalents for terminology. In this preliminary study, we compare the use of online dictionaries, search engines, corpora, and online translation software by translation students and professional translators. Inspired by our experience of running a funded postgraduate professional medical translation project and based on our own experience as both lecturers in medical translation and professional translators, we designed questionnaires to determine how students and professional translators regard online resources and use them in their work. Our aim is to draw conclusions about how these essential tools are used in practice by postgraduate translation students and professionals in the field of medicine. Our findings will help inform our teaching planning with a view to better preparing students for the world of medical translation.

Keywords: medical terminology translation; online resources; professional translators; translation students.

1. Introduction

In this paper, we examine and compare how postgraduate medical translation students and professional medical translators regard online resources and use them to translate medical terminology. In doing so, we aim to identify ways in which the training of medical translators at university can be improved.

Our research was inspired by our experiences of running a two-year funded professional medical translation project for postgraduate students, our interactions with students in our translation classrooms, and our experience as medical translators ourselves. Our questionnaire was prepared on Microsoft Forms and emailed to three participant groups: postgraduate students studying medical translation at University College London (UCL), the alumni of our professional medical translation project, and professional medical translator members of the Institute of Translation and Interpreting (ITI). The students questioned work with a range of languages, including Chinese, French, German, Italian, Japanese, Russian, and Spanish, with most working from English. The medical translators surveyed work from French, German, Italian, Japanese, Polish, Romanian, and Spanish into English. As both UCL and ITI are based in the UK, we only received responses from translators in a limited number of language combinations and directions. However, we believe our results to be representative of tendencies across academia and industry and reflective of the status of English as the lingua franca in medicine (Alasbahy & Shamsi, 2022; Byrne, 2012; Krulj et al., 2011; Montalt-Resurrecció & González-Davies, 2007).

Medical terms are developed "[...] in order to describe a disease situation, medication or dosage so precisely that someone who is only reading or hearing the description understands exactly what is meant" (O'Neill, 1998, p. 70). It follows that the correct and appropriate translation of medical terminology is vital and, in the case of texts used by medical professionals, can have serious repercussions on human health. One of the greatest challenges for medical translators is the abundance of medical terminology present in source texts, a problem that is compounded by terminological variation (Buysschaert, 2021). A further complication is the fact that neologisms, which are either newly formed words or existing words imbued with new meanings as a result of the rapid advance of medical science, may not yet be available in dictionaries or assorted encyclopaedia. This means that translators have no option but to resort to the internet to source their translations. Discussing the use of the internet for the translation of new scientific and technical concepts in general, Jody Byrne (2012, p. 185) states that "[...] the Internet provides a gateway to all of the information you need but the problem is how to find it and, when you have, how to decide which information is the most reliable". For translators working out of English, translating terminology can be especially challenging as many terms coined in English may not have established equivalents in other languages. In such cases, how should translators decide upon the most suitable term to use?

In this study, we aim to establish which online resources the translators surveyed tend to use, how they search for terms, and how they select one term from other options if there is more than one option. By comparing the survey responses from both postgraduate translation students and professional medical translators, we extract conclusions that will highlight the need for more

focused training at the university level to bring medical translation courses more in line with professional practice.

In Section 2 (Background), we explain the motivations behind our research and review existing literature on medical terminology translation specifically. After setting out our methodology in Section 3, we present the survey results in Section 4. The results are discussed together with their implications rather than in two separate sections so that our recommendations can be clearly linked to the data analysis. Conclusions are presented in Section 5, where we have also indicated some future directions of research and noted the limitations of our current study.

2. Background

Our research was first and foremost motivated by a professional translation project that we ran from October 2021 to June 2023 in collaboration with the world-leading Rare Dementia Support (RDS) service, based in London[1] (RDS, 2025).

Over 85 students were involved in this translation project over two years, although not all responded to our voluntary survey. Those involved were paid to prepare translations of RDS website content from English into Chinese, French, German, Italian, Japanese, Russian, and Spanish. The semi-specialised source texts contained terminology specific to the field of rare dementias but were written using a patient-centred approach, in which the "[...] individual patient's specific needs and desired outcomes [are] the driving force of care and communication" (Montalt-Resurrecció & Muñoz-Miquel, 2024, p. 387)[2].

The translators involved were all postgraduate translation students at the time and their translations were project-managed by four staff members, each of whom managed a group of students. Students were allocated both translation and quality assurance work and were asked to regularly update shared glossaries to ensure terminological consistency. As source texts were only available in English, student translators working *into* English were only able to participate at quality assurance stages. Staff members of the project did not all work with the same languages as the students. They were assigned to mentor and were not expected to review translations themselves. Their roles involved overseeing the translation process, helping students to liaise with their client (RDS medical staff) and mentoring students through to translation delivery.

During the course of our professional translation project, we were consulted by students on the use of certain terms, which led to interesting debates on the most appropriate equivalent in our target languages. One example was the term "dementia" itself, which had been translated into Chinese by one group of students as "痴呆症" (*chidai zheng*; *retardedness syndrome*). We later found that the student translators located several translations from the internet, including our recommended database 术语在线 (*shu yu zai xian*; Terminology online), and they based their

[1] The professional translation project was generously funded by the Mercers' Company and Selfridges Group Foundation (via The National Brain Appeal) and UCL's Faculty of Arts and Humanities (through an Education Enhancement grant). It was run by the authors of this article and Dr Mariam Aboelezz.

[2] This patient-centred approach to healthcare communication has led to a new translation-oriented perspective labelled "patient-centred translation", which, in addition to linguistic and conceptual accuracy, "encompasses comprehensibility, cultural and emotional sensitivity, inclusivity, and the ability to bridge knowledge gaps effectively" (Montalt-Resurrecció et al., 2025, p. 1).

selection of translations on how frequently a specific translation is used and/or how authoritative the source using the translation is. Both hit lists and the authority of their identified online resources suggest that "痴呆症" is "the most popular Chinese equivalent" (in the students' words). While some students felt that the term "痴呆症" was "discriminative", they lacked the confidence to select a different translation for "dementia" that was more neutral and less derogatory. Although it is generally agreed that scientific and technical terms are "[...] stable and tend not to gain connotations" (Byrne, 2012, p. 179), in cases such as this one, medical translation students clearly need training so that they are able to make translation decisions based on factors more than hit lists and/or the sources.

During the course of our professional translation project, we asked the student translators to keep a record on a shared spreadsheet of all the sources they had consulted for the final translation of individual medical terms. All sources logged by students were online resources: mostly website articles sourced via the university library or Google Scholar, and some websites of official institutions in the field. Well-reputed term databases were seldom consulted, and IATE (European Union Terminology database) was the only database referenced, appearing only once. This suggests that students either chose not to use recommended online resources or simply chose to consult resources that they are more used to, regardless of their reliability for the task at hand[3].

In the existing literature, Buysschaert (2021) states that traditional paper dictionaries, along with their electronic versions, have the advantage of being reviewed by editors and overseen by well-established publishers. As a result, they can be considered reliable resources for researching translation terminology. However, these dictionaries may not list neologisms or recent terminology in the rapidly evolving medical field. Online resources such as corpora, machine translation software, online dictionaries, and search engines have therefore become the natural alternative, with the advantages of immediate availability, cost-effectiveness, interactivity, and powerful search capabilities. Online resources are not used merely for translating recent terminology but also for selecting established terms: The internet provides a kind of one-stop service for translators.

When devising our survey, we aimed to include questions that would pinpoint how students and professionals actually use online resources in their work, as well as their opinions and approaches towards them. By making the survey anonymous, we hoped to encourage truthful responses. First of all, we were keen to understand the types of online resources that students and professionals believe they can consult when translating medical terms. Lynch (1998) mentions both monolingual and multilingual resources, and lists thirteen online resources, most of which are dictionaries/glossaries, with the rest being what we today know as "corpora" (Olohan, 2016). Buysschaert (2021) also lists key online resources, which he refers to as "term collections" (See Table 1). These databases recommended by Lynch (1998) and Buysschaert (2021) are obviously invaluable resources for medical terminology translation, but they were not used by the translation students participating in the translation project.

[3] It should be noted here that students who had taken the Medical Translation module at UCL had been introduced to online resources for medical translation by their tutors. As the source texts were mainly semi-specialised, however, the project was open to all translation students. Careful source text analysis was conducted by tutor-mentors prior to assigning the translations. The more specialised texts were only allocated to students taking the Medical Translation module.

Table 1: Some key online resources for medical terminology translation

Buysschaert (2021)
Terminologia Anatomica (TA). The TA covers more than 8,000 concepts and is available in Latin and English; it was supplemented with the *Terminologia Histologica*
International Classification of Diseases (ICD)
MEDLINE/ PUBmed database (The French version is updated annually by Inserm, the *Institut national de la santé et de la recherche médicale*, and is also available via *Le MeSH bilingue*)
SNOMED CT: the largest collection of its kind, originally in English only, can be accessed via the SNOMED CT International Browser, and be consulted via the SNOMED CT browser of UTS (*UMLS Terminology Services*, where UMLS is short for *Unifi ed Medical Language System)*. A search for a medical term yields a concept code, a description, hypernyms, hyponyms, and other relationships; For synonyms, some will be labelled as 'preferred', others as 'acceptable'. Several translation projects are in progress to make the collection available in other languages.
Corpora: Wikipedia, Linguee, Glosbe, TAUS Data
Termbases via CAT tools
Translations by machine translation tools: Google Translate and DeepL

Source: Authors (2025)

Buysschaert (2021) additionally recommends that translators self-create termbases using CAT tools, and machine translation tools. He then provides two methods by which a translator may locate online resources for medical terms: One is an "[...] internet search for a topic, adding search terms like *glossary* (for example: *neurology lexicon OR glossary OR dictionary*), which often provides a wealth of resources, at least for the well-documented (especially Western) languages"(Buysschaert, 2021, p. 76); the other is a definition search using the internet by keying in 'define' plus the search term, which often yields "[...] pertinent results in Google, and not just for English" (Buysschaert, 2021, p. 76).

Buysschaert's (2021) suggestions above lead us naturally onto another question that we were keen to ask: How do students and translators assess the quality of various online resources? Translation scholars such as Buysschaert (2021), Byrne (2012), and Lynch (1998), all note this issue, warning translators that some resources are reliable whereas some are unreliable. Buysschaert (2021, p. 76) particularly advises on how to check the quality of a translation for a medical term given its variations:

> It is always recommended to check the validity of these translation suggestions in reliable primary sources. Sites like Google Scholar or Google Books are valuable resources for confirming the use of technical terms in the target language, so is MEDLINE/PubMed. For English, BioMedSearch covers PubMed as well as medical dissertations and a variety of publications. Respected medical journals in the target language, also often available online, are likewise relevant resources for confirming a term and its use. Many of the sources mentioned can also be used to compare frequency of use of competing synonyms (Buysschaert, 2021, p. 76).

Distinguishing between reliable and unreliable online resources, Byrne (2012, p. 187) highlights that "[...] websites belonging to international organisations, government bodies or state organizations are usually a very reliable source of subject information". At the same time, Byrne (2012, p. 186) advises translators to use "[...] a little common sense" when using online resources.

In the forementioned case of "痴呆症", our student translators based their decision on frequency and authority level and ultimately chose an inappropriate translation for "dementia". Arguably, the database 术语在线（Section 2）they referred to has an official status, but the translation in the database evokes connotations that are controversial. Even though the students realised that this was problematic, they did not select the translation that is used less frequently and yet is more acceptable for the sake of empathy. Alasbahy and Shamsi (2022, p. 6) stress that as the translator of medical texts deals with a subject related to human life, it is vitally important that they should be careful in choosing "[...] the exact and accurate translation equivalent for each medical term". We believe it is equally important that translators choose socially appropriate translation equivalents for medical terms, as the incident from our translation project shows, and this aspect particularly deserves translators' attention when they work on patient-oriented texts. Bowker and Hawkins (2006), Buysschaert (2021), Byrne (2012), Kersey-Matusiak (2018), Montalt-Resurrecció and González-Davies (2007), Munane (2014), and Rask (2008) all note social or cultural factors as a cause of medical term variation. For example, Montalt-Resurrecció and González-Davies (2007) consider the emotional impact of translation choices on patients. Similarly, Rask (2008) discusses in depth the translation of the word "progressive" from English to Swedish when it is used to describe the course of dementia in a British textbook on nursing the elderly aimed at nursing students. Among the two available choices, "progredierande" and "progressiv", Rask (2008) states that "progredierande" is preferable as it avoids the positive connotation of "progressive". It is thus necessary to investigate if translators use available translations for a term critically, be they students or professionals.

A further question we wanted to ask is whether students being trained as medical translators are sufficiently guided on how to search and use online resources for medical terminology translation, including the use of search engines such as PubPsych (España-Bonet et al., 2019), Google and Baidu, etc. We believe that simply introducing students to online resources in class does not amount to guidance. Instead, guidance requires comprehensive instructions on what kinds of online resources are available, their respective advantages and disadvantages, and how translators should carry out information mining (Campos et al., 2012), to better utilise these resources for medical terminology translation. Maniez (2008, p. 166) proposes that it is "[...] a worthwhile investment for any teacher of medical translation to devote a fair amount of instruction time" on how to do online searches to tackle medical translation issues, including medical term translation. Fernández's (2015) exploratory research into the use of internet resources by students enrolled in an introductory university-level medical translation course has shown that previous internet search training appears to have a positive relationship with where and how information is sought. Notwithstanding, neither author provides any information on what internet searching training involves.

Before formal and targeted training materials can be designed, it is essential to investigate students' current knowledge of online resources and the ways in which they use such resources.

For this purpose, we feel it very useful to compare medical translation students with medical professional translators, which is a point also raised by Alasbahy and Shamsi (2022).

3. Research methodology

3.1 Survey

In light of our own experience from our translation project and our literature review, we conducted a survey study by designing two questionnaires based on the one used in Xu and Wang (2011): Questionnaire 1 was designed for university medical translation students (both current postgraduate medical students and alumni of our professional medical translation project), and Questionnaire 2 for professional medical translators. We categorised online resources into four broad groups: online dictionaries/glossaries, online corpora, search engines and online translation software. We also wanted to examine the search methods used by the two groups of translators and how they made their translation decisions when faced with various options for the translation of individual medical terms. Questionnaire 1 had 26 questions and Questionnaire 2 had 27 questions. Most of the questions in the two questionnaires were exactly the same, with the exception of questions requesting the background information of our respondents and two other questions: Questionnaire 1 had a question that asks "Did your lecturers explain what online resources you could use and how to use them in your practical translation class?"; Questionnaire 2 had a question that instead asks "Have you received formal training on how to use online resources to translate medical terms and how to interpret/use the results that these online resources give?"; Questionnaire 2 had an additional question that asks professionals' opinion on the need to train students to use online resources. The questionnaires were prepared on Google Forms, and their links were sent to our research subjects via email.

3.2 Research participants

We invited current translation students and alumni from the previous two academic years—all from UCL—to complete Questionnaire 1. Emails were sent out to current students on the medical translation module offered at UCL and all participants of our translation project between 2021 and 2023. As we mentioned in Section 2, the language pairs of respondents were English, and respectively Chinese, French, German, Italian, Japanese, Russian, and Spanish. We invited professional medical translators to complete Questionnaire 2 via the ITI Medical Translation Network. Both surveys were conducted anonymously, and volunteers were given a period of two weeks to send their responses. In total, we received 18 responses from professional translators and 13 responses from our translation students. For the student responses, 2 came from the same medical translation class but gave contradictory responses to the question which asks if their lecturers had explained what online resources they could use and how to use them. This therefore invalidated their survey responses, and we removed them from our study.

4. Results and discussion

4.1 Respondents and their characteristics

Student survey responses were received from both current medical translation students (4) and alumni of the RDS project (9). Current students' language combinations and directions included English>German (1) and English>Polish (1). As noted above, we had no choice but to remove the 2 responses from English>Chinese students so we only worked with 11 student responses. Not all RDS project alumni entered their languages but those who did listed English>Russian (1), English>French (1), English>Chinese (1), and English>Japanese (1).

Of the 11 student responses retained, 6 confirmed that they had taken the medical translation module offered, and 5 had not. This means that almost half may not have received any formal instruction on the use of online resources for translating medical terminology, and therefore our survey results from student respondents should not be taken as representing medical translation training, but rather as representing views of translation students regardless of their specialised field.

Professional translator responses were received from 18 members of the ITI Medical Translators Network (MedNet). Of those, 2 stated that they had been translating for 3-5 years, 5 for 5-10 years, 3 for 10-20 years, and 8 for more than 20 years. Their working languages were listed as English>German (1), German>English (4), German<>English (1), Spanish>English (4), Portuguese>English (1), French>English (3), Swedish<>English (1), English>French (2), Romanian<>English (1), Italian>English (1), German>French (1), Italian>French (1), Japanese>English (2), and Polish>English (1)[4]. The fact that the survey was only sent to members of one network within ITI (MedNet) means that only a restricted range of language combinations and directions are represented.

4.2 Use of online resources for translating medical terminology

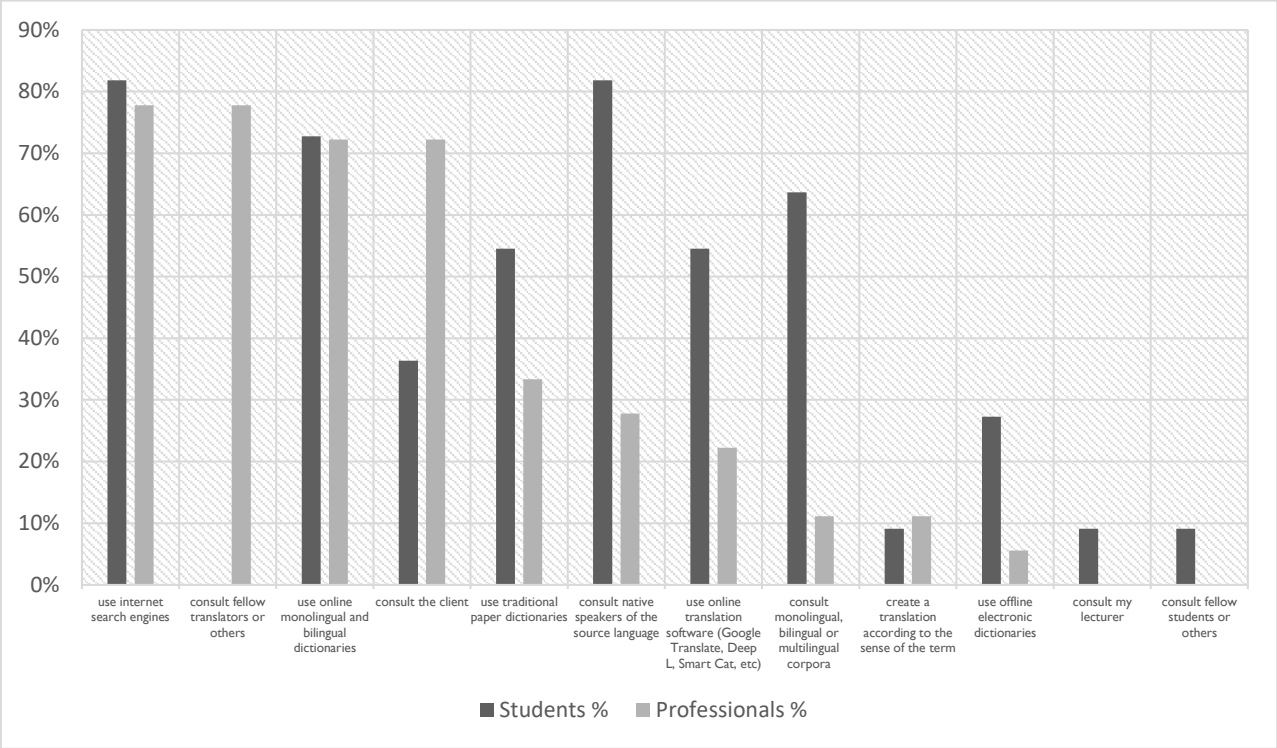
The overall picture of where the students and professionals made use of the various types of resources for medical terminology is shown in Figure 1. Student respondents were given two additional options: "consult fellow students" and "consult my lecturer", which is why there is no data on this from professional translators. Similarly, "consult fellow translators" was not an option for the students. Students were allowed to respond with "consult the client" because those who had participated in the RDS professional translation project had been in contact with the authors of the source texts and medical professionals running the service.

As can be seen in Figure 1, both the students and the professionals used online resources more than paper dictionaries. Among the online resources, those most used by the students are search engines, monolingual and bilingual online dictionaries, monolingual, bilingual or multilingual corpora, and online translation software. For the professionals, the online resources that most of them consulted are search engines, and monolingual and bilingual online dictionaries. The students consulted online resources more than the professionals in general, and sometimes much more as in

[4] Some translators listed more than one language.

the use of online translation software and monolingual, bilingual or multilingual corpora. For both the students and the professionals, only a very small percentage (around 10%) would create a translation for a term themselves. This, in our view, suggests that they largely rely on the online resources for a translation.

Figure 1: Use of available resources



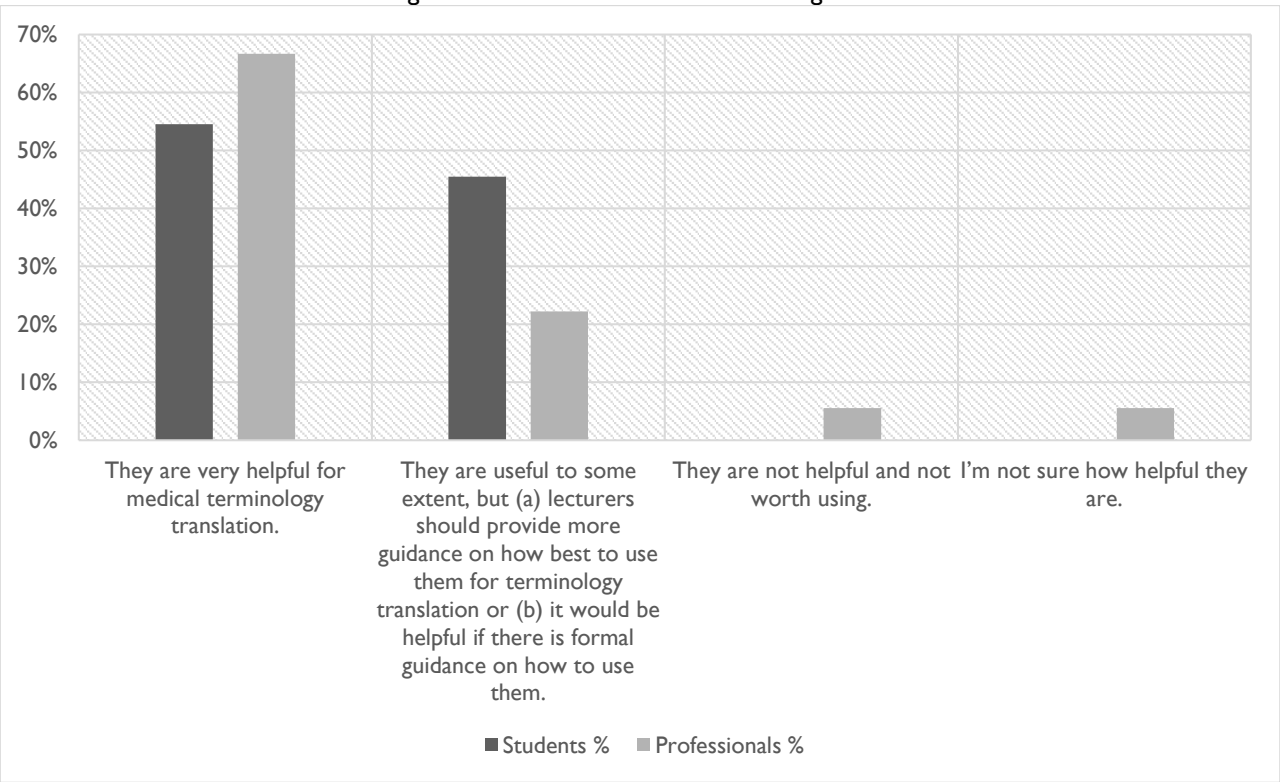
Source: Authors (2025)

It is notable that students consulted native speakers of the source language far more than the professionals, but the professionals consulted their clients far more than the students, and they also frequently consulted fellow translators. This may reflect the working contexts of the two groups: Students are surrounded by native speakers of the source language (English) at their institution, whilst professionals are used to liaising with their clients and networking with fellow professionals (in particular through the specialised networks like MedNet). This also shows that both the students and the professionals regard their human network as important for translation and use them when they can. The value that translators place on the human resources available to them is worth exploring further but is beyond the scope of our current research.

4.3 Views on the usefulness of online resources for translating medical terminology

Our surveys asked the participants for their views on the usefulness of online resources. As Fig. 2 shows, the majority of both the students and the professionals rated online resources as "very helpful for medical terminology translation". Only the professionals expressed any doubt about how useful online resources are generally, and only to a limited extent.

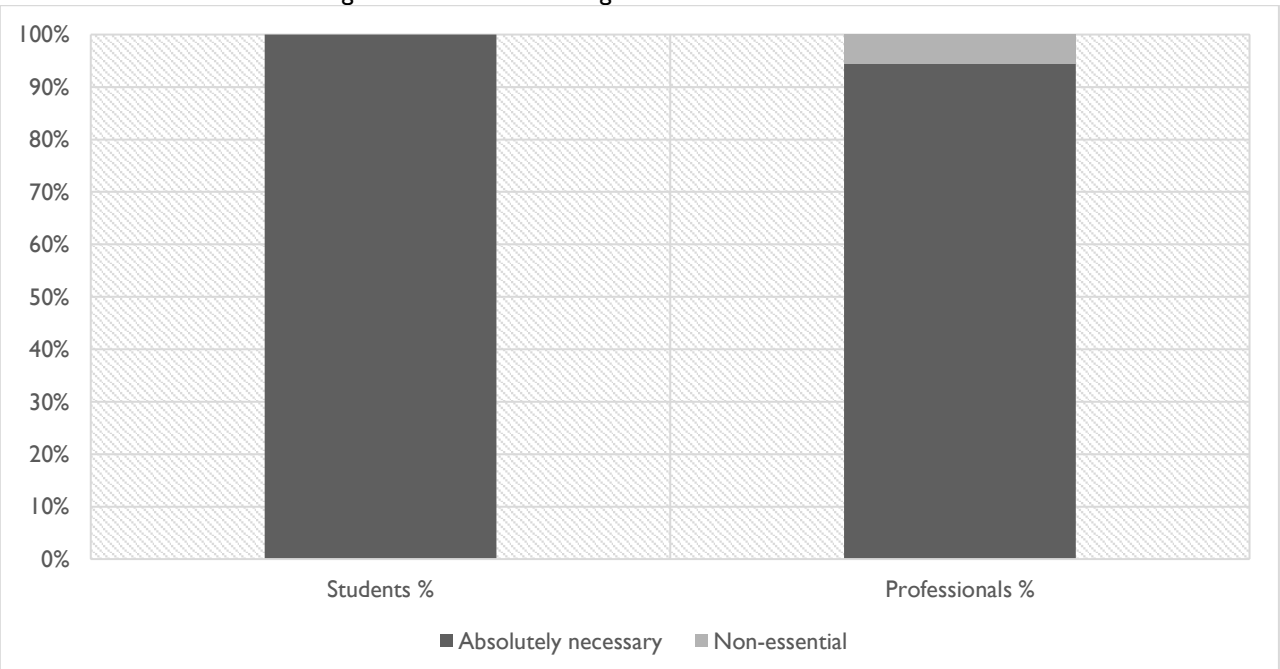
Figure 2: Views on online resources in general



Source: Authors (2025)

There was also a near-unanimous consensus that students should be trained in how to use online resources, with 17/18 (94%) professionals and 11/11 (100%) students describing this as "absolutely necessary" (Fig. 3).

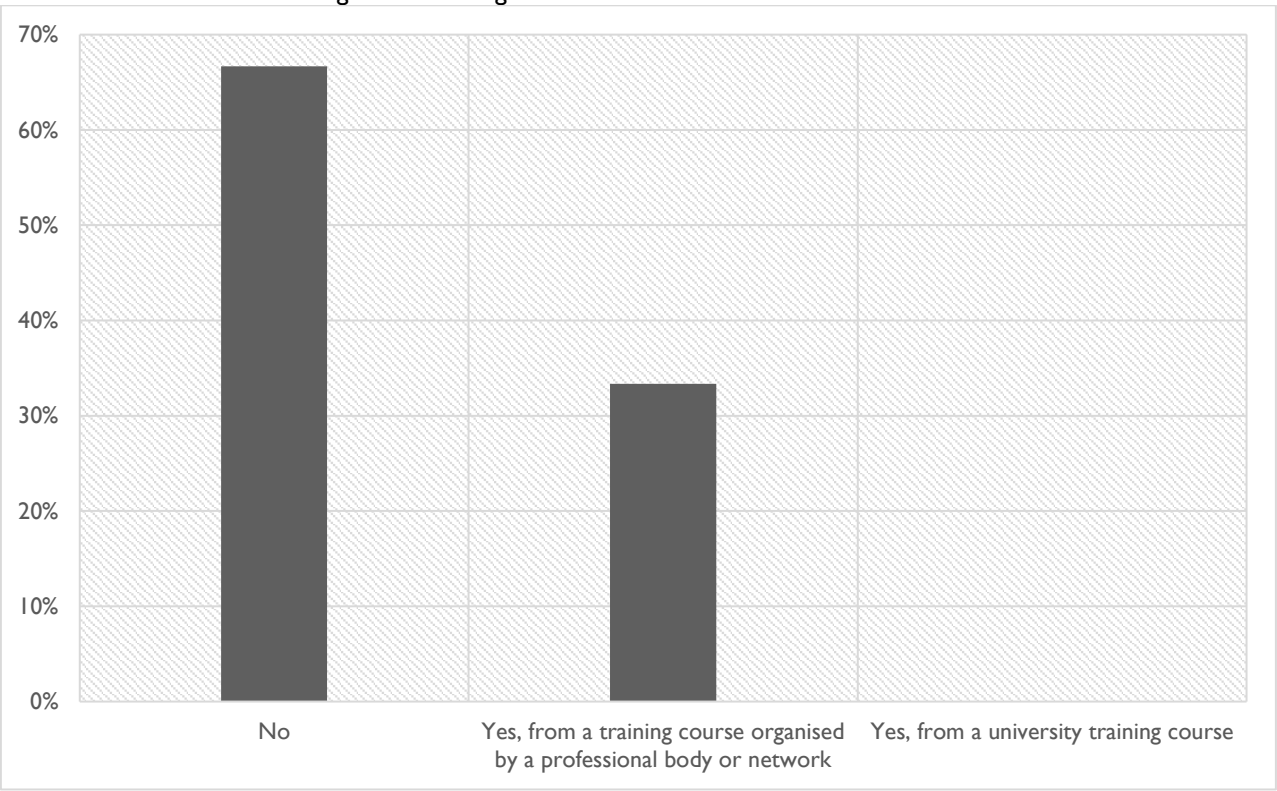
Figure 3: Need for training in how to use online resources



Source: Authors (2025)

It is interesting then that despite this perceived need, the majority (12/18 = 67%) of professional translators surveyed had never received training on using and evaluating online resources, and those that had received such training (6/18 = 33%) had received it "from a training course organised by a professional body or network", with none having received such training from a university course. This is shown in Figure 4.

Figure 4: Training received on how to use online resources



Source: Authors (2025)

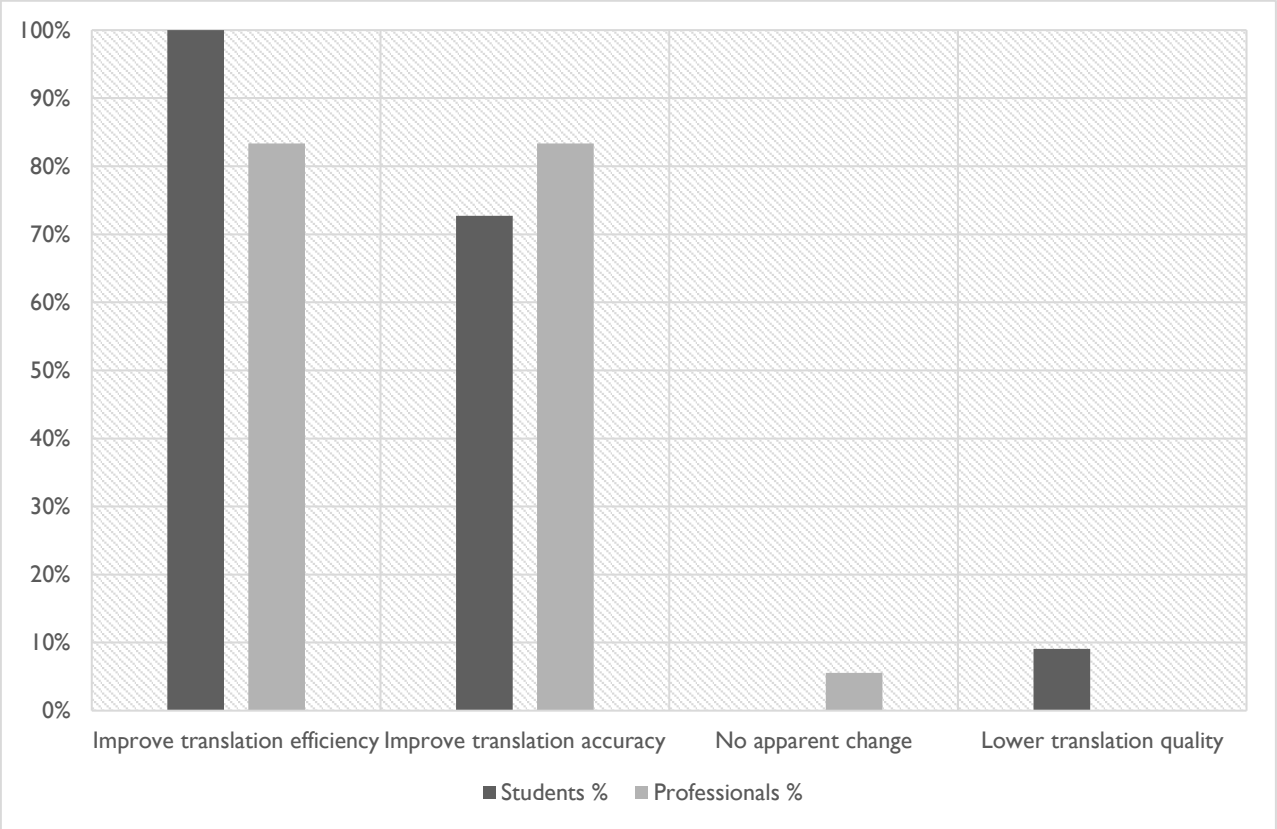
We might wonder whether there is a generational lag here, with more experienced translators potentially having completed university training when the internet was not such a prominent feature of translation practice, and as such may not have seemed an essential component of translation curricula at the time. However, more than a third of the professionals (7/18 = 39%) had been working as translators for 10 years or less—certainly within the period since Byrne (2012) mentioned using the internet for translation purposes—and of these none had received training on online resources in a university setting. Only 1 of these 7 had received formal training from a professional association. Drawing any sort of conclusions on this point rests on two assumptions, however: firstly, that respondents had received any sort of university training at all, something that we neglected to ask in the survey, and secondly, that respondents completed any university training *before* starting to work as translators, which is not necessarily the case. Clearly, then, it is safe to assume that these professionals would have taught themselves to use online resources to translate medical terminology at a time when the internet was not used as frequently by translators as it is now.

Returning to safer ground, we can draw at least two conclusions (if somewhat contradictory ones) from our data: firstly, that the vast majority of respondents in both groups consider training in using online resources essential, and secondly, that such training is not a regular feature of university courses, but does seem to be available from professional bodies, at least to some extent.

Our surveys also aimed to find out the specific ways in which online resources are deemed useful, if at all, for medical terminology translation. The results are charted in Figure 5.

The majority of both the students and the professionals were of the opinion that online resources either "improve translation accuracy" or "improve translation efficiency", or indeed both. A very small proportion of the professionals and none of the students selected "no apparent change". The one student respondent who stated that online resources had lowered their translation quality also selected "improve translation efficiency" and "improve translation accuracy", so it is possible that the option "lower translation quality" was selected by mistake, though we cannot know this for certain.

Figure 5: Views on online resources in general

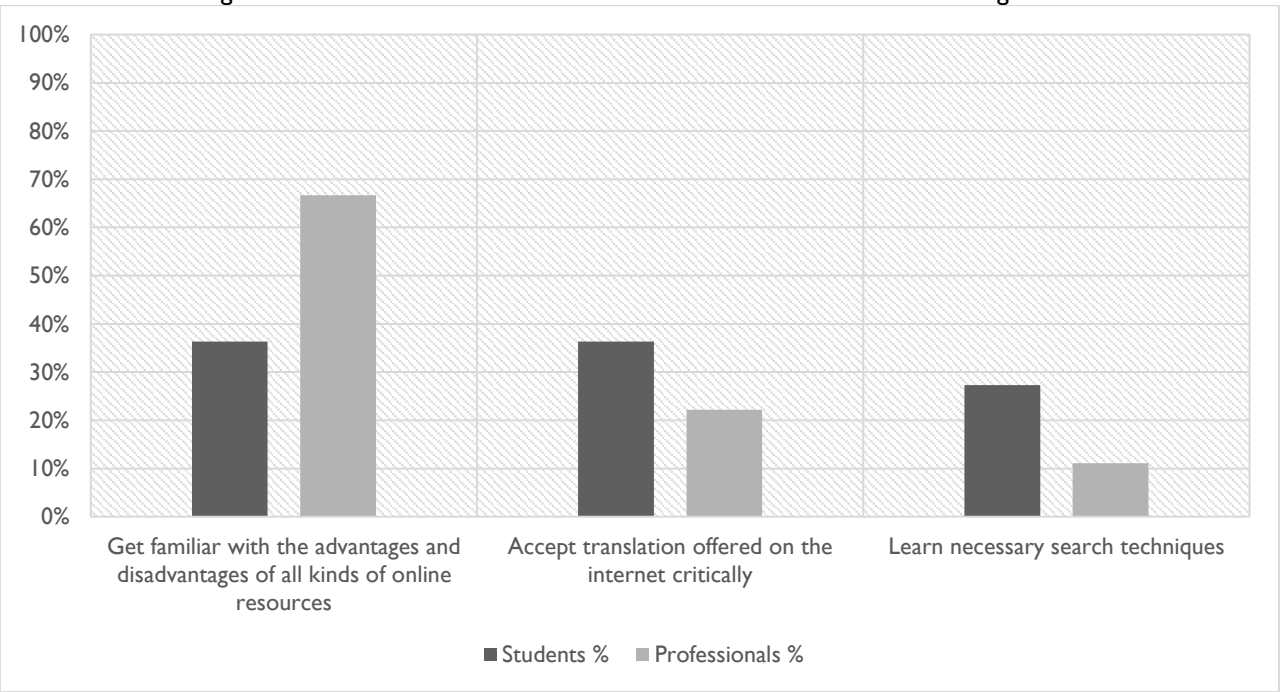


Source: Authors (2025)

When questioned about using online resources for medical translation generally, 4/11 (36%) students believed they should "get familiar with the advantages and disadvantages of all kinds of online resources", and 4/11 (36%) would "accept the translation offered on the internet critically". A further 3/11 (27%) believed it important to "learn the necessary search techniques". The majority of professional translators believed that before using internet sources they needed to "get familiar with the advantages and disadvantages", with 12/18 (67%) selecting this option. Of the other

respondents, 4/18 (22%) would "accept the translation offered critically" and 2/18 (11%) would "learn the necessary search techniques". These results are shown in Figure 6.

Figure 6: How online resources should be used for medical translation in general



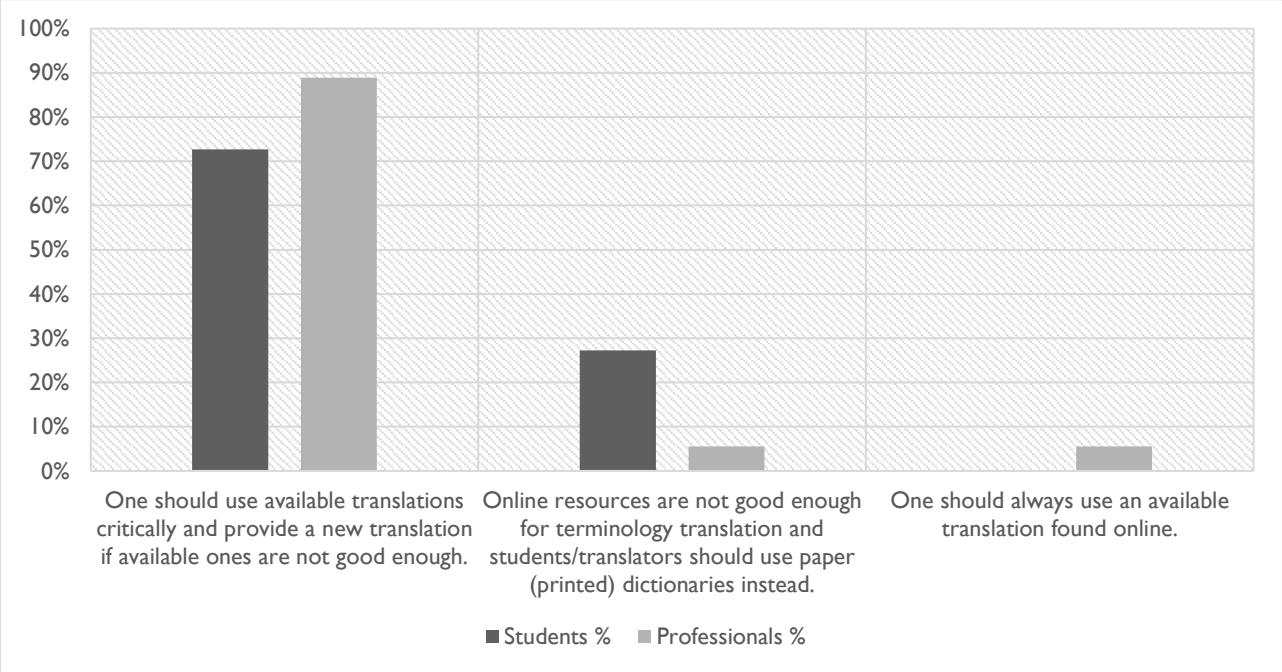
Source: Authors (2025)

Similar attitudes were expressed regarding using online resources to source medical terminology specifically (Fig. 7): 16/18 (89%) professional translators were clear that "One should use available translations critically and provide a new translation if available ones are not good enough". This was also the most popular choice amongst translation students, with 8/11 (73%) selecting this option. Interestingly, 1/18 (6%) respondents from the professional translator group and 1/11 (9%) from the student group selected that "online resources are not good enough for terminology translation and students/translators should use paper (printed) dictionaries instead". In the survey of professionals 1/18 (6%) respondents selected the option "one should always use an available translation found online" in response to this question.

Amongst the professional translators, having the confidence to "use available translations critically and provide a new translation [of a term] if online options are not good enough" did not correlate with years of experience: Of the 11 who had been translating for more than 10 years (8 for 20+ years and 3 for 10-20 years), 2 did not choose this option whilst all of the less-experienced translators (with 3-10 years of experience) did. This was a surprise to us but the limited number of respondents in our survey mean that it is difficult to extract specific conclusions here. We believe that giving students the opportunity to gain professional experience whilst at university (as with the RDS project, for example) or at least simulating professional scenarios in the classroom (as we do in our medical translation module) is essential for developing the confidence to use online resources critically and to suggest new translations for terms if required. We witnessed this first hand in our professional RDS translation project, as discussed above, when students felt that the most frequently

located term "痴呆症" was "discriminative" but lacked the confidence to decide on a different translation for "dementia" that was more neutral and less derogatory.

Figure 7: How online resources should be used for medical terminology translation specifically



Source: Authors (2025)

4.4 Online resources cited by respondents

Our online surveys invited participants to list the resources they use as responses to three questions. In this section, we discuss the most commonly cited online dictionaries, translation software, and search engines.

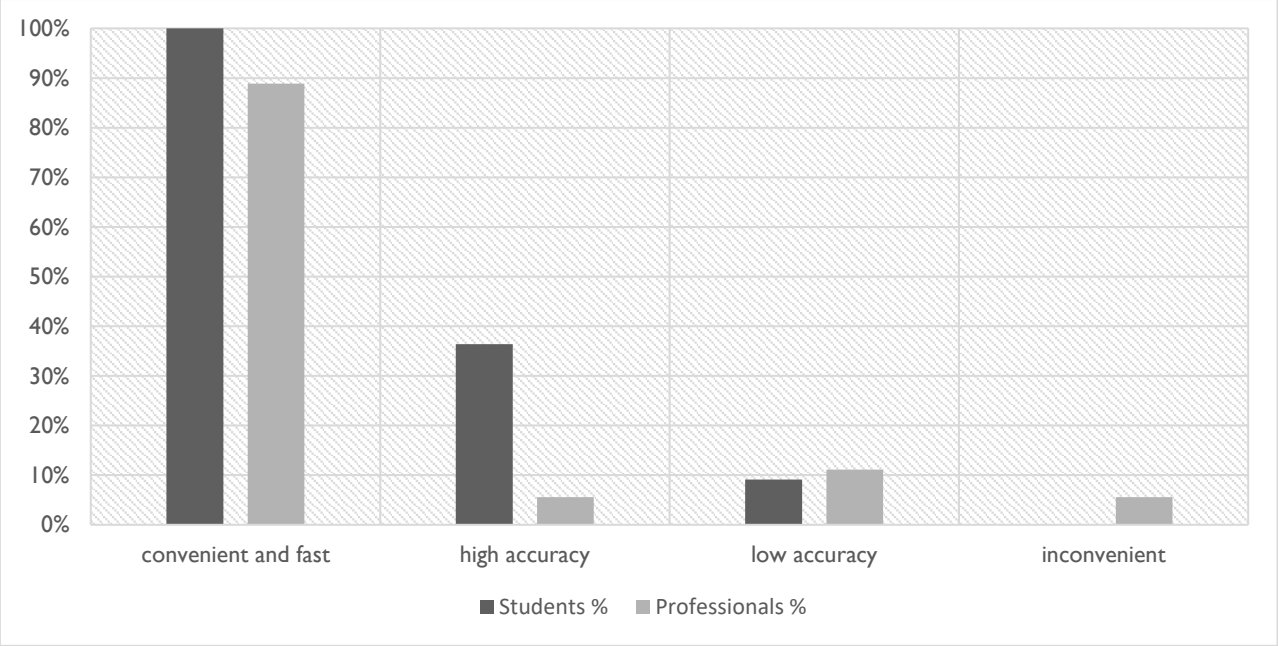
4.4.1 Online dictionaries

The most common online dictionaries mentioned were Cambridge Dictionary, Oxford dictionaries, Merriam-Webster Medical Dictionary, Collins Dictionary, and WordReference.

When asked to select from a list of characteristics, there was a broad consensus across the two groups that online dictionaries are "convenient and fast", though this was not unanimous amongst the professionals (Fig. 8). Of greater importance is how confident the groups felt relying on online dictionaries, as expressed in how accurate they consider them. There was a clearer distinction here between students and professionals, with 4/11 (36%) students considering them to be highly accurate, compared to only 1/18 (6%) of professionals. Less marked was the distinction between students who considered online dictionaries to have low accuracy (1/11 = 9%) and professionals with the same view (2/18 = 11%). This does mean, however, that the majority (6/11 = 55% of students and 15/18 = 83% of professionals) did not indicate any views on the accuracy of online dictionaries. Since accuracy is probably the most important characteristic of online dictionaries, it would perhaps have been advantageous to ask this as a separate question in order to

obtain a clear opinion from our respondents. However, there are simply so many online dictionaries of varying quality and authoritativeness that it is not possible to ascribe a single label to them. Professionals were somewhat more likely than students to use either only paid-for online dictionaries or a combination of paid-for and free ones (6/18 = 33% and 3/11 = 27% respectively). Only 2/18 (11%) professionals and 2/11 (18%) students who used paid-for dictionaries expressed any opinion as to their accuracy. Both students selected "high accuracy" in the question about the characteristics of online dictionaries. One professional stated that online dictionaries have "high accuracy" and one professional stated "low accuracy", so we cannot draw any conclusions as to whether participants felt that paid-for dictionaries were more accurate.

Figure 8: Views on online dictionaries



Source: Authors (2025)

Online databases such as IATE (for all 24 EU languages, see Section 2), 术语在线 (for Chinese, see Section 2), and UNTERM Portal (for Arabic, Chinese, English, French, Russian and Spanish) are also a kind of online dictionaries and they provide the latest authoritative translation for terminologies including medical terms. No student listed any databases in the survey. In Section 2, we noted that IATE was listed by 1student in the resources they used for our professional project. One possible reason why no database was listed in our survey is that the student who listed the database for our project did not participate in our survey. Another possible reason is that the students did not think databases are online dictionaries. It is also unclear why 术语在线, which was recommended to all the Chinese translators, was not listed either in the resources for our project or in our survey. This raises questions as to how online databases and their relation to online dictionaries may be better discussed with students.

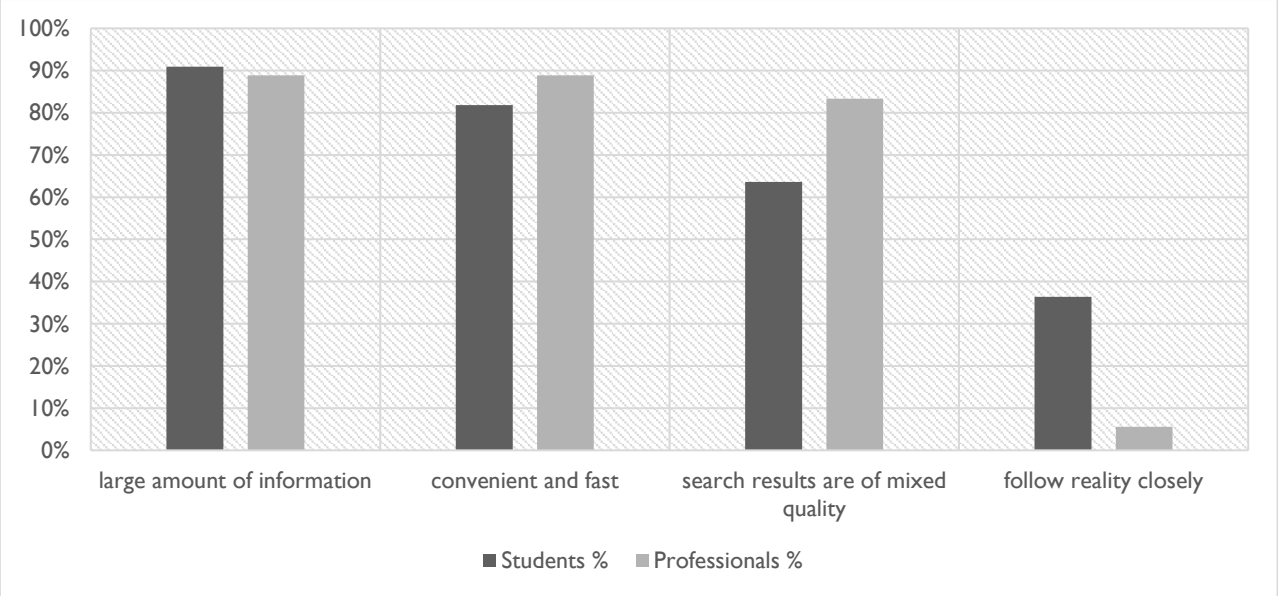
In a similar vein, no professional cited any databases in our survey. As we have found, the professionals who participated in our survey did not receive university training on online resources (Section 4.3). This we believe may be the reason for their not listing any databases in our survey.

4.4.2 Search engines

The most common search engines mentioned were Google Scholar, Google, and DuckDuckGo. Specialised search engines like those recommended by Buysschaert (2021) (also see Table 1 in Section 2), e.g., PUBmed, which we believe are especially effective for medical terminology translation, were noticeably absent from both sets of data. Some professional respondents wrongly mentioned Firefox as a search engine. These findings make us wonder if formal training needs to be conducted for both students (on a translation course) and professionals (in the form of a continuing professional development (CPD) course) regarding the types and sub-types of online resources available for medical terminology translation.

Of the student respondents, 8/11 (73%) reported using internet search engines "often" and 3/11 (27%) "sometimes". Professional translators were similar in their responses, with 17/18 (94%) claiming to use search engines "often" and just 1/18 (6%) using them "sometimes". In the student responses, 1/11 (9%) included both DeepL and Linguee as examples of search engines and 1/11 (9%) included Linguee as an example. This raises questions about students' understanding of what the term "search engine" exactly refers to and whether this is another area that would benefit from in-class training. When asked about the characteristics of internet search engines, almost all professional translators (16/18 = 89%) labelled them as "convenient and fast" and as containing "large amounts of information", but 15/18 (83%) understood that "search results are of mixed quality". Only 1/18 (6%) professional translators answered that they believe search engines to "follow reality closely". Among the student respondents, 9/11 (82%) answered that search engines are "convenient and fast", 10/11 (91%) answered that they contain "large amounts of information", 7/11 (64%) understood that "search results are of mixed quality" and an increased proportion (4/11 = 36%) compared with the professionals (1/18 = 6%) thought that search engines "follow reality closely". Figure 9 shows these results.

Figure 9: Views on search engines

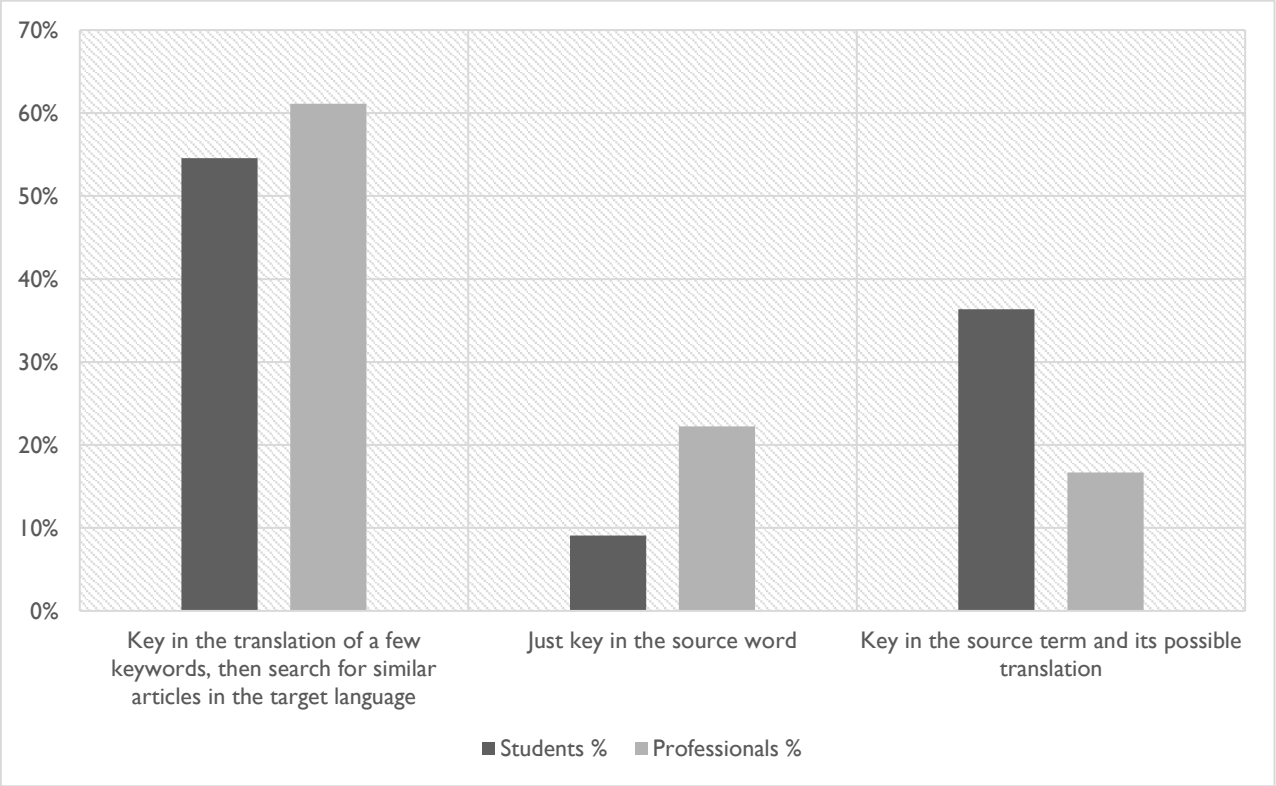


Source: Authors (2025)

We also attempted to examine in detail how participants use search engines to research translation terminology.

When asked how they use internet search engines, professional translators preferred to "key in the translation of a few keywords, then search for similar articles in the target language" (11/18 = 61%), with 4/18 (22%) responding that they "just key in the source word" and 3/18 (17%) replying that they "key in the source term and its possible translation". Of the student respondents, 6/11 (55%) preferred to "key in the translation of a few keywords, then search for similar articles in the target language", with 1/11 (9%) responding that they "just key in the source work" and 4/11 (36%) replying that they "key in the source term and its possible translation". These results are displayed in Figure 10.

Figure 10: Search methods when using search engines

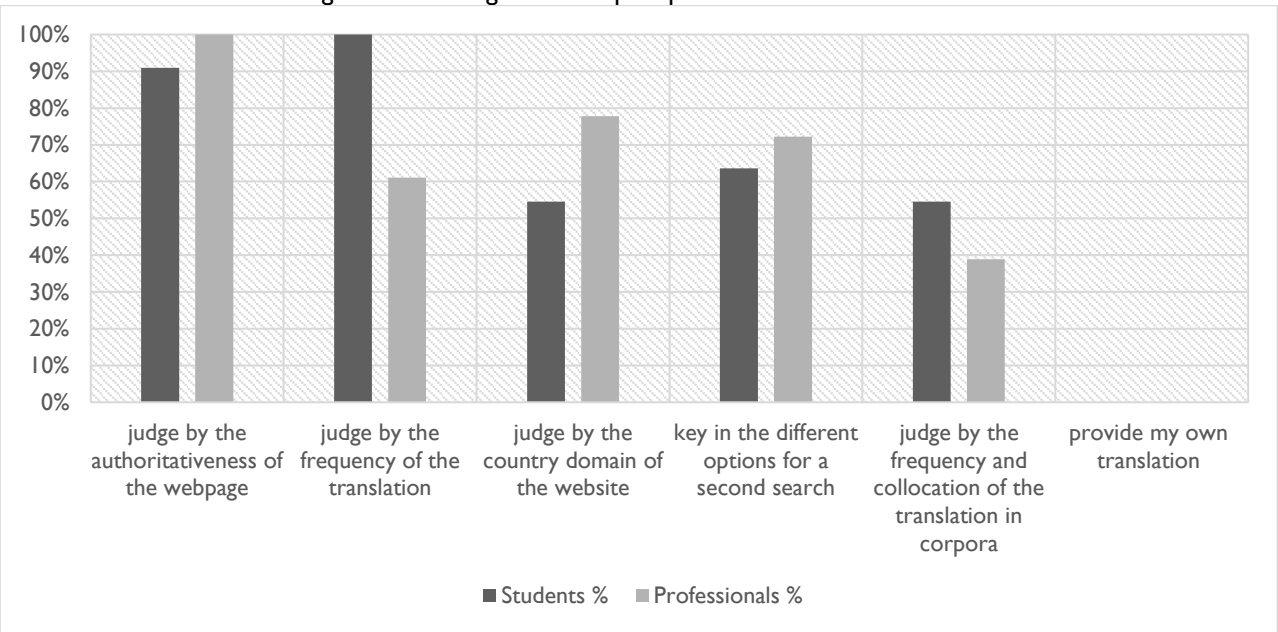


Source: Authors (2025)

We were keen to know how translators make their choice when more than one option for the translation of a particular term appears. The responses to this question were numerous as we invited participants to select more than one option from our list (Figure 11).

All professional respondents (18/18 = 100%) selected "judge by the authoritativeness of the webpage" in contrast to 10/11 (91%) of the students. All students (11/11 = 100%) selected "judge by the frequency of the translation" compared to 11/18 (61%) of the professionals. At 14/18 (78%), the second most popular choice amongst the professionals was "judge by the country domain of the website", whereas only 6/11 (55%) of students selected this option.

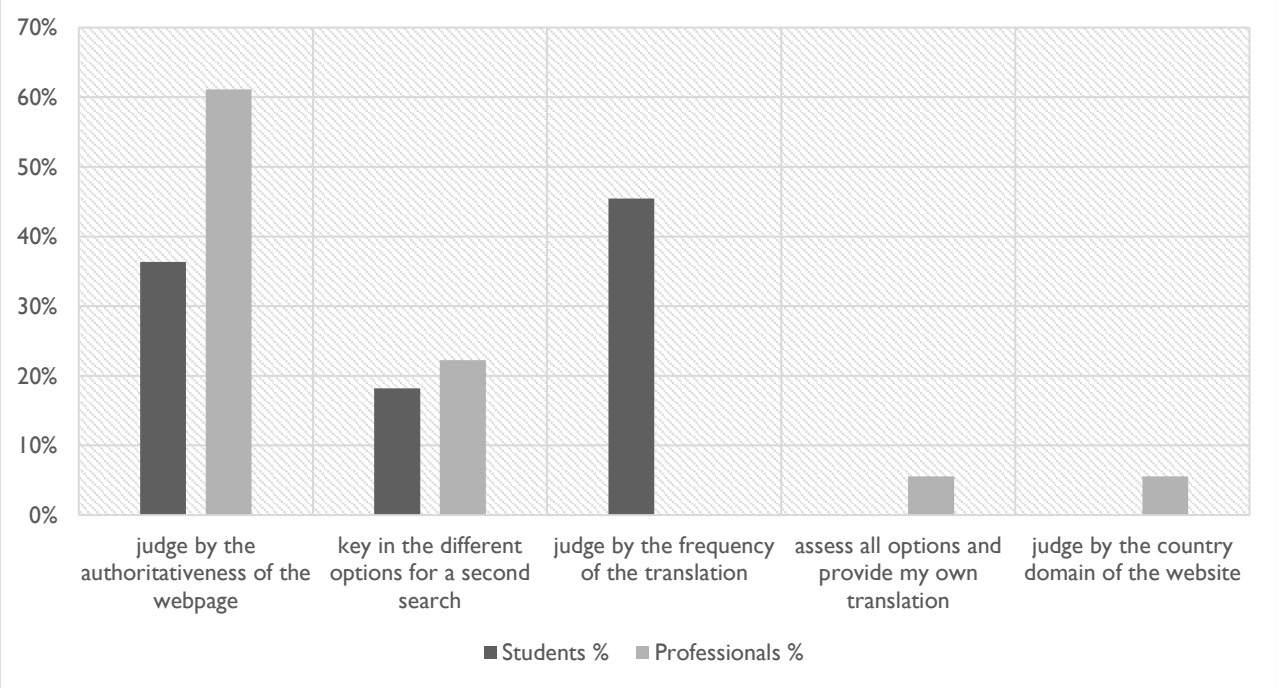
Figure 11: Dealing with multiple options found on the internet



Source: Authors (2025)

When asked which of these factors as in Fig.11 was the most important, most of the professional translators (11/18 = 61%) believed "judge by the authoritativeness of the webpage" to be the most important option, whereas the students placed more importance on the frequency of the translation appearing (5/11 = 45%) than the authoritativeness of the website (4/11 = 36%). The remaining students (2/11 = 18%) would "key in the different options for a second search", as would 4/18 (22%) of the professionals (Figure 12).

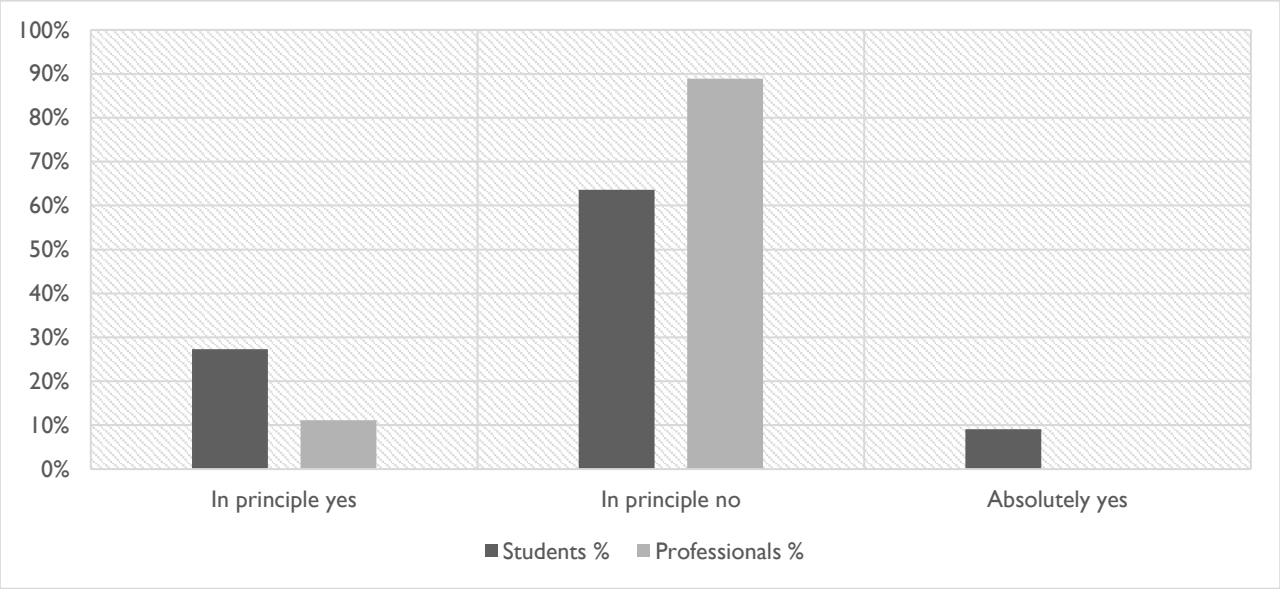
Figure 12: Most important factor when selecting a translation found online



Source: Authors (2025)

When asked if one can judge the reliability of a translation solely by the number of hits from the internet search engine, 7/11 (64%) students responded "in principle, no" whilst 16/18 (89%) professional translators preferred this option (Fig. 13).

Figure 13: Can one judge the reliability solely by the number of hits?



Source: Authors (2025)

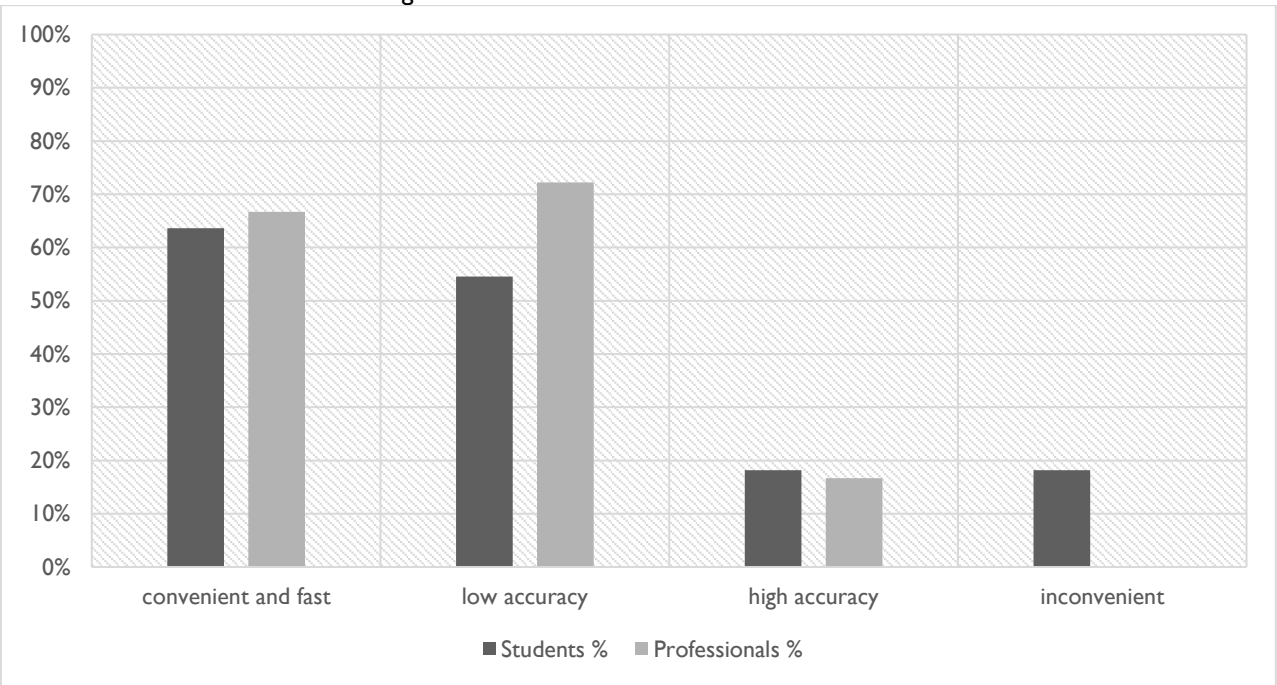
These results generally align well with what we experienced in our professional project (Section 2), where the student translators drew upon hit list and/or authoritativeness of an online source to decide even if they felt the translation for a medical term in question is subject to controversy. These results also reflect what we presented in Figure 1, where we found that students and professionals largely reply on online resources to provide a translation rather than creating a translation by themselves. A question worth pondering is perhaps if we need to spend a good amount of time debating and guiding students on how to critically make use of available online resources.

4.4.3 Online translation software

The most frequently cited online translation software by professional translators and students alike was DeepL and Google Translate.

As regards the characteristics of online translation software (Fig. 14), the majority of the students and the majority of the professionals thought that they are "convenient and fast", with a slightly larger proportion of the professionals holding this view. At the same time, however, more professionals than students rated their accuracy as low, with a significant minority of both students and professionals rating online translation software as having high accuracy, and a similar minority of students considering them inconvenient. Overall, students had more confidence in the accuracy of online software than professionals.

Figure 14: Views on online translation software



Source: Authors (2025)

Bearing in mind the background of our professional participants, who mostly have worked for more than 10 years and some for more than 20 years in the industry (Section 4.1), we feel the differences between professionals and students in their views of online translation software reflect the rapid development of translation software in recent years. Today's translation software is more advanced than it was 10 or 20 years ago and ChatGPT is only a recent introduction. Online translation software has improved dramatically in terms of accuracy and overall translation quality, so much so that the heated debate as to whether it will replace human translators has been ongoing (Moneus & Sahari, 2024; Prieto Ramos, 2024; Sahari et al., 2023). Learning medical translation within this external environment, there is no doubt that the student respondents of our survey have a more positive view towards online translation software. A corollary would be that our training guidance for online translation resources will need to be constantly updated so as to reflect the current developmental status of online translation software.

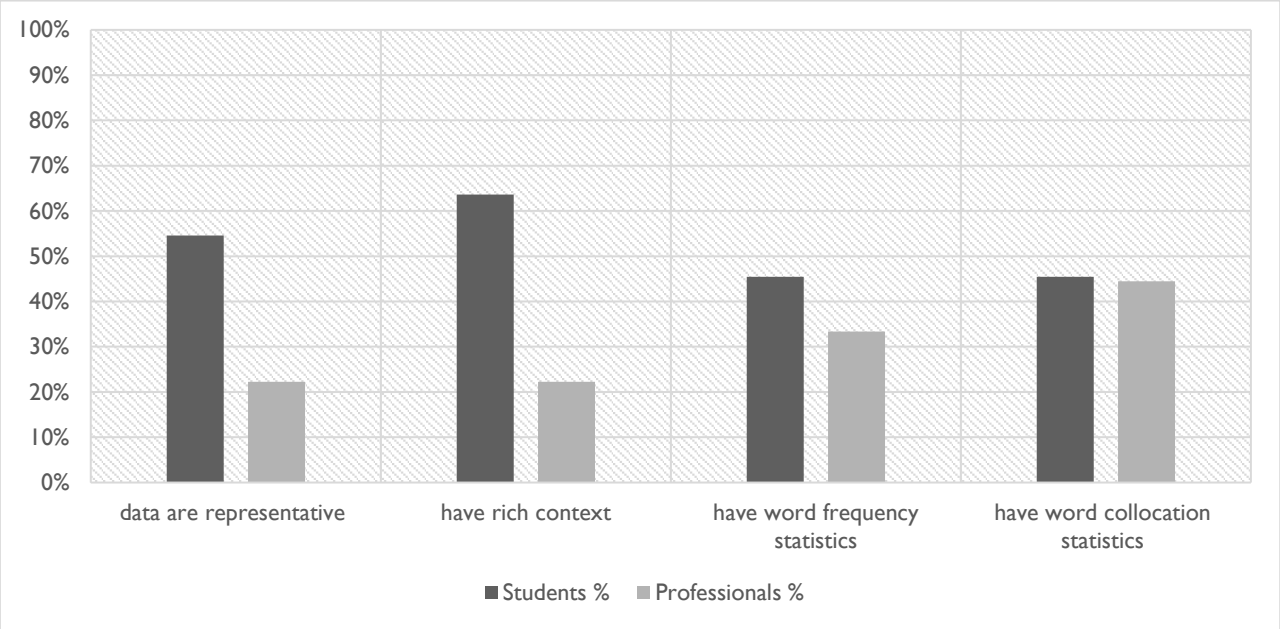
4.4.4 Corpora

When it came to corpora, 4/11 (36%) students and 6/18 (33%) professionals responded that they "sometimes" or "often" use corpora. Students generally had a more positive view towards corpora, as a higher proportion of all students (including those that answered they did not use corpora) selected corpora "have word collocation statistics", "have rich context" to help them translate medical terms and that the "data are representative", which we could potentially interpret as a measure of the perceived accuracy of corpora[5].

[5] Only 1 participant in either group said that they had used paid corpora. That participant expressed the view that the "data are representative".

These tendencies are presented in Fig. 15.

Figure 15: Views on corpora



Source: Authors (2025)

By accident, the question where we asked the participants to name the corpora that they often use was not included in the surveys. Consequently, we were not able to know what kinds of corpora they typically use for their translation of terminology. In spite of this lapse, our results regarding the participants' view on corpora are still valid.

5. Conclusion

Our survey study has shown that online translation resources are used more often than paper dictionaries by both students and professionals, and both groups think such resources are helpful for their translation of medical terminology. Our research on online dictionaries also reveals that neither students nor professionals list databases amongst the resources they use. Our study of the use of online translation software indicates that students generally hold a more positive view of this continually developing translation technology. With regard to search engines, those specially for medical translation are not used and respondents show only partial knowledge of what search engines are, as in the case of online dictionaries. As for corpora, students' view towards them is generally more positive than professionals'. Overall, both students and professionals acknowledge the benefits of using online resources to improve their translation speed and accuracy. However, students and professionals also recognise the drawbacks of online resources, especially those of online translation software.

Both students and professionals indicate the need of guidance on using online resources. We agree with this point of view, judging from the results out of our two surveys. Having established that training is required, the next question is what sorts of skills universities should aim to hone when creating course materials. It does seem that even without formal training, participants—both

professionals and students—certainly felt they had acquired the skills necessary to make use of internet search engines and dictionaries, though corpora less frequently. An important factor for trainers to consider here may be to what extent students wishing to enter the translation profession start university courses with existing transferrable skills in evaluating online resources, especially when it comes to the "digital native" generations.

Another factor is to what extent these skills can only be acquired through extensive practical "on the job" experience, something that goes beyond the scope of most university courses. Universities should, presumably, aim for a middle ground, i.e., not unnecessarily repeating the basics of how to use a search engine, but also not assuming too much prior knowledge. Perhaps the answer lies not so much in training students in specific skills, but in (a) conveying particular attitudes or stances towards these online resources, including scenarios where existing translations evoke strong emotions, (b) helping students develop a nuanced understanding of what each type of online resource is and does (e.g., online dictionaries, search engines), and (c) guiding students to choose from the full range of online resources and search methods available at that moment. Overall, we take the stance that the next step is for translator trainers to design targeted teaching materials so as to provide useful guidance.

This said, we also recognise the limitations of our survey study. The sample size, especially for student participants, is relatively small (though it reflects the typical size of a postgraduate translation class at UCL and other key universities in the UK). Nearly half of the students surveyed are not medical translation students but were involved in our professional medical translation project. As a result, our findings do not fully represent how medical translation students use online resources, though it is safe to say that the results are certainly indicative of their practices. Future studies along a similar line but on a quantitative scale would strengthen these findings. Although we asked our participants to cite specific online dictionaries, search engines, and online translation software, we did not include a question where we could ask them to cite specific corpora they might have used. We also did not survey the use of parallel texts (In the translation project we discussed in Section 2, the articles searched and used as reference materials by our students are parallel texts). We hope future studies along a similar line will include both. Finally, the student participants all translate from English whereas most of the professional participants translate into English, and this difference may impact the overall survey results. Research along a similar line in future will hopefully try to recruit two groups who both translate either into English or out of English.

Despite the limitations, we believe that our study is the first of its kind surveying both students and professionals in order to examine their use of online resources for medical terminology translation for the purpose of better medical translator training. Our findings and recommendations can also be extrapolated to other translation areas. A final point is that, in our study, we did not try to relate the use of online resources to translation quality. Online resources are a tool for translation, just like paper dictionaries. In the era before the internet, it would have been hard to translate medical terminology without paper dictionaries, which would affect translation quality. In the era of the internet, paper dictionaries are still available, and thus translators have the choice of making use of either online resources or paper dictionaries or both for translation quality. It would be intriguing to assess how online resources and paper dictionaries respectively contribute to translation quality, but this would be the task of a different research project.

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Editorial notes

Authorship contribution

Conceptualization: C. Wang, O. Cockburn, D. Stockings
Resources: C. Wang
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Data analysis: O. Cockburn
Visualisation: D. Stockings
Writing – review and editing: C. Wang, O. Cockburn, D. Stockings

Research dataset
Not applicable.

Funding
Not applicable.

Image copyright
Not applicable.

Approval by ethics committee
According to UCL's Research and Innovation Services (https://www.ucl.ac.uk/research-innovation-services/compliance-and-assurance/research-ethics-service/do-i-need-ethical-approval), the data collection methods for our current research fall into the category "Fully anonymous online surveys on non-sensitive topics" and therefore we do not need ethics approval. This is also confirmed in writing by our faculty that "this is indeed exempt from requiring research ethics approval".

Conflicts of interest
Not applicable.

Data availability statement
The data from this research, which are not included in this work, may be made available by the authors upon request.

Publisher
Cadernos de Tradução is a publication of the Graduate Program in Translation Studies at the Federal University of Santa Catarina. The journal *Cadernos de Tradução* is hosted by the Portal de Periódicos UFSC. The ideas expressed in this paper are the responsibility of its authors and do not necessarily represent the views of the editors or the university.

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Andréia Guerini – Willian Moura

Style editors
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Article history
Received: 29-01-2025
Approved: 24-05-2025
Revised: 11-08-2025
Published: 10-2025