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Bilingual online dictionaries and translation tools as a source of terminology: Insights for translation pedagogy

Dorota Osuchowska

University of Rzeszów

Abstract: This study aimed to assess the reliability of online bilingual dictionaries for translating specialist terminology. The vocabulary for the test was extracted from an official glossary of EU terminology and provided to a group of 36 English Philology students attending a basic-level translation course. The students were asked to identify words for which they would need to use a dictionary. Additionally, they were interviewed to determine their typical look-up strategies when confronted with unfamiliar words, collectively referred to as their standard dictionary behavior. Then, these strategies were emulated during the test of the reference tools the students typically used. The research concludes that online reference tools are not reliable sources for specialist terms. The results also indicate which reference skills should be introduced into the training program by translation teachers, particularly those working with novice translators.

Keywords: Bilingual online dictionaries, comparative analysis, reliability assessment, search strategies, translation teaching

1. The study's background

1.1 Gradual transition from traditional print to online dictionaries

The possibility of producing dictionaries in the electronic medium, which emerged in the eighties, promised to solve a number of problems that traditional print dictionaries could not successfully handle. Comprehensive electronic lexical databases could now be used to "generate a dictionary of a given size and scope in a fraction of the time it used to take" (Crystal, 2007, pp. 215–216). Next, databanks of examples could be exploited to offer users more illustrative material, demonstrating how a word is used in real-world contexts. In summary, these and other innovations provided by the electronic medium so radically transformed the dictionary-making process that, as stressed by, among others, Granger (2012), Pearsall (2013) or Rundell (2012; 2013), most lexicographers and publishers immediately agreed that the future is online.

Research by De Schryver and Joffe (2004), Bergenholtz and Johnsen (2005), Loucky (2005), Sengupta (2012), Jin and Deifell (2013), L'Homme and Cormier (2014), Lew and De Schryver (2014), Levy and Steel (2015) or Maslawati et al. (2017) confirmed that users around the globe indeed switched to online reference works. The possibility to access a dictionary from a mobile phone, which was taken advantage of by participants of studies such as Law and Li (2011), only accelerated the transition process. Undoubtedly, the special merits of reference work in the electronic medium compared with the printed dictionary – the possibility of using them regardless of time and place, their portability, ease of use, speed of access, and the fact that many of them were free of charge – played a significant role in this transition. In turn, a finding that many students choose a dictionary following their teachers' recommendations (Béjoint, 1981, p. 214; Bareggi, 1989, p. 165) highlighted the need to introduce online dictionaries to classroom practitioners, especially considering that many of them continued to exhibit a marked preference for printed reference works (Dashestani, 2013).[1]

1.2 Research on the quality of online dictionaries

The ever-increasing number of users exhibiting a strong preference for electronic dictionaries created a need for analyses that would assist dictionary compilers in determining which innovations offered by the electronic medium would be accepted and which would be perceived as of secondary or no importance. To exemplify, a study by Kaneta (2011) aimed at determining whether publishers should opt for a traditional entry layout resembling what is typically seen in print dictionaries or a folded layout where users need to click on a button to reveal a certain part of the entry that is otherwise hidden. Other issues requiring closer scrutiny included determining whether users preferred audio

[1] In this study, an online dictionary is defined, after Müller-Spitzer, Koplenig and Töpel (2011), as a dictionary that requires an active internet connection for its use. As regards different classification schemes for dictionaries available in digital format, the most widely recognized one is probably a scheme devised by De Schryver (2003).

pronunciation alone or audio pronunciation followed by transcription (Klosa, Koplenig, & Töpel, 2014) or how users rated different features of online dictionaries. In one such study (Müller-Spitzer, Koplenig, & Töpel, 2011), it was discovered that a dictionary's reliability and clarity – the very same features that users have been emphasizing for centuries when discussing what distinguishes a good dictionary from a mediocre one – seem more important than "the unique characteristics of online dictionaries (e.g., multimedia, adaptability) [which – D.O.] were rated and ranked as (partly) unimportant" (p. 207).

Studies into the reliability of online dictionaries that were also launched such as Lew and Szarowska (2017), Lew (2011), Yamada (2013), Heuberger (2020), and Gelpi (2007) produced mixed findings. The results obtained by these scholars indicated that while many online dictionaries were reliable and provided accurate information, errors and inconsistencies were not uncommon. Concerns also arose regarding their coverage of specialized terminology. Although, as observed by Lew and Szarowska (2017, p. 146), online bilingual dictionaries included IT and computer science vocabulary, the coverage was not comprehensive. These findings align with earlier research, such as the study by Bergenholtz and Johnsen (2005) on a monolingual Danish dictionary, which revealed gaps in lemma inclusion, particularly in specialist areas such as computer science, finance, law, and medicine (p. 127 ff.) which, in turn, indicates that (Biel, 2008) relying solely on a single online dictionary as a source of information is not advisable, and it is often necessary to cross-check information across multiple sources.

Upon closer scrutiny, it must be noted that the insufficient coverage of specialist terminology in general-purpose dictionaries does not arise from negligence on the part of the compilers. On the contrary, lexicographers involved in their preparation often emphasize their awareness of the importance of this particular segment of the lexicon for general users. In fact, the percentage of scientific and technical words in today's general-purpose dictionaries transforms them into collections of subject-field dictionaries merged with a general dictionary, with the general portion being compressed into an ever smaller proportion of the total work (Landau, 1989, p. 21).[2] The omissions identified and criticized by reviewers do not necessarily mean that a term has been overlooked; on the contrary, it may have been considered and rejected for valid reasons, typically because it falls beyond the scope of the particular dictionary

(Landau, 1989, p. 307). Furthermore, considering the disproportionately high growth of scientific and technical vocabulary in recent decades, users should not expect that every term will soon be included in wordlists of general or specialist dictionaries. As evidenced by the studies mentioned above, the transition to electronic mediums has not yet resolved this problem to the satisfaction of users and reviewers.

[2] The proportion of entries in general-purpose dictionaries, as cited by Landau, may exceed 40 percent in the case of larger reference works, while it stands at 20-30 percent for college and desk dictionaries (Landau, 1989, p. 21). This tendency is also observed in dictionaries designed for foreign learners of English, as evidenced by prefaces to updated editions such as the second edition of the well-known learner's dictionary (Hornby, 1963, p. v) in which prospective users are reassured that the compilers have included new words and phrases needed by individuals who use English for general purposes, as well as scientific and technical terms commonly found in periodicals but not those rarely encountered outside advanced textbooks and specialist publications. This attention to specialized vocabulary in reference works aimed at general users continues a tradition seen in earlier English dictionaries, such as Cocker's *English Dictionary* of 1704, which boasted the inclusion of many military and commercial terms (Landau, 1989, p. 20). However, the expectation for today's lexicographers to include a significant number of terms in general-purpose dictionaries goes beyond tradition; it reflects the prevailing cultural view in our society that science and technology are of paramount importance (Landau, 1989, p. 21).

1.3 Initial indications that search engines could replace dictionaries

The last finding relevant to this study that needs to be mentioned is that the technologies that have brought about dramatic changes in dictionary-making have resulted in one more unexpected outcome. As reported by Müller-Spitzer, Koplenig, and Töpel (2011, p. 203), they have given users an additional option: to 'bypass' a dictionary and search websites for information that, a few decades ago, only a dictionary could provide. While this possibility is also mentioned in other studies the three scholars refer to in their publication, the scholarly interest has not often focused on whether using a search engine instead of a dictionary is a strategy that translation teachers could safely recommend to students who cannot be introduced to more advanced computer-assisted translation (CAT) tools due to factors such as limited time or lack of necessary equipment.

The remainder of this paper is structured as follows. The methodology section provides a brief overview of the steps taken to determine the standard reference behaviour for an English major student faced with a translation task involving specialist terms. The subsequent results section describes the outcomes obtained from online searches conducted using the Google search engine, which was reported by respondents as their standard tool for finding Polish equivalents of unknown English words and phrases during a 15-hour introductory-level translation course. The section also presents the results of lookups performed in two popular bilingual English-Polish dictionaries and Google Translate, which are additional resources available to individuals in such situations. The equivalents obtained from these four online sources are compared with the equivalents provided by an official glossary of EU terminology compiled by the European Commission and supplemented with Polish equivalents by experts from the Translation Department of the Office of the European Integration Committee in Warsaw. The analysis concludes with a brief discussion of the implications of the findings for translation teachers and an outline of future research that could provide further insights into the investigated issue.

2. Methodology

While the dictionary behaviour of users has long interested scholars (see Cowie, 1999), there has been limited attention given to ecological validity in these studies (Nesi, 2002, p. 277). Many studies have namely required users to look up words that they may not necessarily wish to search for, in dictionaries they would not typically consult, and for purposes they may not fully understand or subscribe to. Therefore, the central focus of this study was to test the four sources listed above using words that *students* would not know how to translate which is also consistent with the postulate forwarded by Chan and Taylor (2001, p. 163) who claim that for a dictionary evaluation to be truly useful, at least part of it "should be based on a study of the use of the dictionary by target users."

As regards the selection of EU terminology as the test item for the evaluation of online resources, it has been driven by two factors. Firstly, it has been chosen due to the lack of sufficient attention it received in previous studies. Secondly, it is a segment of the lexicon that, following Nesi's recommendations, individuals majoring in English may frequently need or want to look up. Since Poland acceded to the EU, this vocabulary has become increasingly prevalent, extending beyond the realm of professional translators. Therefore, testing the available resources to assess how well or poorly they cover this vocabulary fulfils Nesi's requirement to design research based on words that dictionary users may eventually need to look up, for purposes that they understand and subscribe to.

Considering the lack of considerable attention given to the treatment of EU terminology in online bilingual dictionaries, I designed a small-scale study aimed at filling the research gap. During the first phase of the study, I created a list of 789 English EU terms that I extracted from an official multilingual glossary *Polityka regionalna* (Regional policy) which was published in 1997. The list, featuring only the English terms, with their French, German and Polish equivalents removed, was next divided into 36 parts to be distributed among the 36 students who were taking a 15-hour (one semester) course in translation during the academic year 2023-24. The only task the students were asked to perform at this point was to mark all English terms they would not be able to translate into Polish without consulting a dictionary. The students were informed that returning the marked list indicated their consent to participate in the study, which meant that their responses would be analyzed and potentially published while ensuring their anonymity.

When the partial lists were returned, I selected from them 30 English noun-noun combinations to be used during the next phase of the study.[3]

Before presenting the steps taken during the next stage of the study, it needs to be clarified that, technically speaking, the students were not preparing for a career in translation. The basic-level translation course they took is offered to second-year English Philology students at the University of Rzeszow, Poland, with which the study's author is affiliated, as part of the undergraduate teaching English as a foreign language programme. This allows us to categorize the respondents as inexperienced translators, with their proficiency level somewhere between C1 and C2 (CEFR), i.e. between advanced and proficient. The course, which introduces them to the basics of translation, has the majority of tasks consisting of translating from English into Polish and has been introduced into the teaching curriculum due to the fact that translating and interpreting is these days a routine on-the-job requirement at many Polish companies (see Osuchowska, 2021) at which philology graduates find employment.

Two weeks after the students had returned their lists, a face-to-face in-class interview was conducted to inquire about the strategies they typically employ when faced with items they are unable to translate. Given that the complexity of such items may vary (e.g., *urban renewal* versus *urban revitalization policy*), I clarified that I was specifically interested in their usual approach when translating two-element expressions such as *shipbuilding industry*, *technology content*, or *cropland*, which I wrote on the board. The majority of the students (30 out of 36) stated that if they had to translate any of these phrases into Polish, their strategy would involve typing the entire phrase into the Google search box, adding 'po polsku' (meaning 'in Polish'), and utilizing the suggested equivalent provided by Google. The remaining six students mentioned that at times they might only type in one element of the phrase they were unfamiliar with, such as *shipbuilding* instead of *shipbuilding industry*. However, for the purpose of this study, I decided to look up the phrases using what turned out to be the predominant strategy among the students.

The exact procedure employed by my respondents, as mentioned briefly earlier, is not uncommon. Müller-Spitzer, Koplenig, and Töpel (2011, p. 203) describe it as a strategy adopted by a hypothetical user who initially visits an online dictionary but, while attempting to locate the search window, becomes distracted by various innovative buttons, hyperlinks, and other features. Consequently, this individual decides to switch to a well-known search engine as they prefer websites that allow them to easily find the necessary information. Fredholm's study (2015), in which participants expressed difficulties in navigating online dictionaries and found them time-consuming, confirms the likelihood of the scenario described by the aforementioned scholars. Similar findings have been reported in research conducted by Niitemaa and Pietilä (2018) and Xu and Wang (2011), who also highlight the use of popular search engines like Google.

The response given by the students to the first question naturally led to the next inquiry: whether they ever extended their searches beyond what Google suggested. It was revealed that online dictionaries were also consulted, but only in cases where typing a phrase in the Google search box yielded no results or results that clearly did not make sense in a specific context. On such occasions, the students described following a routine procedure of looking up the word in

[3] The selected items, along with their translation equivalents provided by the glossary, were as follows: 1. airport infrastructure (infrastruktura lotnisk); 2. border regions (regiony przygraniczne); 3. business incubator (inkubator przedsiębiorczości); 4. Cohesion Fund (Fundusz Spójności); 5. communication infrastructure (infrastruktura komunikacyjna); 6. concentration principle (zasada koncentracji); 7. convergence programme (program konwergencji); 8. development plan (plan rozwoju); 9. drainage systems (systemy odwadniania); 10. employment opportunities (możliwości zatrudnienia); 11. employment policy (polityka zatrudnienia); 12. employment premium (premia za zatrudnienie); 13. factory sites (tereny fabryczne); 14. feasibility study (studium wykonalności); 15. growth sector (sektor wzrostu); 16. Guarantee Fund (Fundusz Gwarancyjny); 17. information campaign (kampania informacyjna); 18. island region (region wyspiarski); 19. job losses (utrata miejsc pracy); 20. labour shortage (niedobór siły roboczej); 21. market services (usługi rynkowe); 22. market survey (badanie rynku); 23. population trend (tendencja demograficzna); 24. problem region (region problemowy); 25. production potential (potencjał produkcyjny); 26. research centre (ośrodek badawczy); 27. return migration (migracja powrotna); 28. review clause (klauzula rewizyjna); 29. services centre (centrum usługowe); 30. waste incineration (spalanie odpadów).

the first dictionary that appeared on their cell phone screens. In this scenario, they employed the same procedure they used for Google, typing the entire phrase into the search window of the dictionary. If the first dictionary did not provide the equivalent, the search was continued in the subsequent dictionary that appeared on the screen. According to the student's admission, *diki.pl* and *bab.la* seemed to be the most frequently encountered dictionaries. Consequently, these two online bilingual dictionaries were chosen for use in the study.

The fourth tool selected for testing was Google Translate, which, technically speaking, is a translation tool rather than a dictionary. This choice was based on the fact that it is often referred to as a popular online resource by other students the author teaches and studies such as White and Heidrich (2013), Jolley & Maimone (2015), Clifford, Merschel and Munné (2013), and Tight (2017) have found that it is one of the online tools regularly used by post-secondary level students.

The last question posed to the students during the in-class interview pertained to the specific parts of an entry they examined when using an online dictionary rather than another online tool. Since the survey focused on their translation process from a foreign language into their native language, the students indicated that they only look at the equivalent translation and typically do not consult the usage examples. This explains the strategy described earlier, where they abandon a dictionary if it does not have a particular entry and switch to the next one. Once they find the desired entry, they extract the equivalent and integrate it into the text for which they were referencing, sometimes making necessary modifications such as using the plural form. However, this strategy also reveals that the respondents are untrained users, as the online dictionaries tested often 'hide' the equivalent within the illustrative examples, which appear under the information that the searched item is not listed as an entry in that specific dictionary.

Finally, regarding the criteria chosen for evaluation, the first criterion, coverage, is aimed at determining if all 30 test items are covered by the four reference tools listed above. Secondly, my aim was to determine whether the equivalents provided by Google, *bab.la*, *diki.pl*, and Google Translate would be identical to those given by the official glossary (acceptability). This requirement mirrors the conditions under which students often work in translation classes, where the equivalents they find are compared to those in the answer key of their textbooks. The results of the conducted queries are presented in the 'Results' section below.

3. Results

The initial test aimed to determine if all 30 test items are covered by the four reference tools students use regularly. Google Translate demonstrated superior performance compared to the other three resources, as it was the only tool that provided *all* the equivalents used in the test, although two of them had to be rejected as unacceptable, meaning that they differed from the equivalents given in the official glossary so substantially that accepting them as correct translation equivalents would change the meaning of the original in which they appeared. In contrast, the other three resources did not perform equally well. When using Google, further searches were required for four test phrases (*information campaign*, *market services*, *return migration*, and *services centre*). *Diki.pl* did not have three out of the 30 entries that were looked up, while *bab.la* lacked 12 entries from the tested vocabulary. Accordingly, after this part of the analysis, one must conclude that online reference tools are not reliable sources for specialist terminology.

As regards the second criterion used, namely which of the four tools would provide students with the highest number of equivalents matching the official glossary of EU terminology, Google Translate had the most reliable performance, with 22 identical matches. In turn, Google, which was the students' preferred choice, ranked second with 18 identical equivalents. The two dictionaries, *diki.pl* and *bab.la*, exhibited significant differences in terms of acceptability. *Diki.pl* produced 17 identical equivalents, while *bab.la* provided only 9 identical equivalents. The overall accuracy rates were as follows: 73.33% for Google Translate, 60% for Google, 56.66% for *diki.pl*, and 30% for *bab.la*. When the evaluation criteria were adjusted to consider equivalents that could be deemed acceptable within certain limits, Google Translate maintained its leading position, providing 28 expressions (93.33%) that, while not identical to the glossary's

suggestions, could still be used.[4] The other three resources did not perform equally well in this respect. Google yielded 24 acceptable translations (80%), *diki.pl* provided 22 (73.33%), and *bab.la* offered 14 (46.66%).
The subsequent simulation I carried out focused on determining the number of steps a student would need to take to find the lookup item that Google did not have. For this test, a randomly selected phrase, *information campaign*, was used. Since typing it in the Google search box produced no results, I switched to the first dictionary on my screen, *bab.la*. When it became evident that it also did not include the phrase in its wordlist, I switched to the next dictionary that appeared after *bab.la*, *diki.pl*. This reference work was the first among the three sources checked to provide *kampania informacyjna* as an equivalent for an *information campaign*. In other words, if this search had been conducted using traditional printed dictionaries, it would have required consulting three different reference works to find the equivalent of the lookup item.

Insufficient reliability based on the three specified criteria is not the sole issue that online bilingual dictionaries may need to address in the future. Another problematic aspect, in my view, is the practice of providing users with multiple equivalents. For instance, *diki.pl* translates *Cohesion Fund* as both *Fundusz Kohezji* and *Fundusz Spójności* without offering further clarification on whether these two can be considered synonymous and used interchangeably in all contexts. Additionally, the online bilingual dictionaries tested employ a practice of compensating for the lack of a specific (complex) entry by providing a few equivalents for the individual words that make up the phrase. For example, when searching for *convergence programme* on *diki.pl*, the user is informed that the phrase is not listed in the dictionary. However, beneath this message, *zbieżność* and *konwergencja* are listed as possible translations for the first component of the phrase, and *project*, *plan*, and *program* are provided as equivalents for the second noun. From my experience, this 'strategy' may only yield results if the phrase is already known to the user but temporarily forgotten, and the dictionary simply serves as a reminder. However, such a scenario is infrequent among less experienced users

4. Discussion

Dictionaries are essential tools for professional translators, translation trainees, and English majors who are frequently required to engage in translation tasks at their workplaces (see Osuchowska, 2021). As a result, translation manuals (Dzierżanowska, 1990; Kussmaul, 1995; Belczyk, 2009) dedicate a considerable portion of their content to critically discussing different types of dictionaries and highlighting their advantages and limitations. Dictionary reviewers also regularly conduct evaluations of various dictionary design features to provide valuable insights for lexicographers, teachers, language learners, and translators.

The advent of digital dictionaries has further emphasized the necessity for evaluations, given the varying quality that exists among them. The evaluation conducted by the author on two commonly used online English-Polish dictionaries challenges previous findings. This study revealed that while these dictionaries may suffice for less demanding users, their coverage of specific segments of the lexicon does not warrant their classification as reliable translation tools.

The most significant finding of this study is that students who may eventually join our translation classes no longer view dictionaries as their primary source of information. Their strong inclination towards utilizing Google, the default search engine on Safari for iPhone, demonstrates that previous distinctions, such as categorizing translation-related information as solely obtainable from language-based resources like dictionaries or grammars while seeking other information elsewhere, are becoming outdated. Websites are now widely recognized as valuable sources for *any* type of information, including encyclopaedic data *and* translation equivalents. The fact that Google yielded better results compared to the two general-purpose dictionaries used in the study partly explains why students exhibit a strong

[4] What I mean by 'acceptable within certain limits' is connected with the fact that translation trainers I have spoken to over the past thirty years acknowledged that their approach to evaluating students' results often depends on various factors such as the length, level, and content of the translation courses. Put differently, this approach may vary depending on whether the course is designed for students pursuing translation as a career or for those specializing in teaching, where the introductory-level translation course is included to enhance the program's appeal, but students are unlikely to engage in significant translation work after leaving school.

preference for using this search engine rather than relying on free online dictionaries: they resort to Google because it has previously provided them with a significant number of answers, including translations, that their teachers have accepted as correct.

Simultaneously, the finding that searching for a term on Google may occasionally fail to produce the desired results raises an important question regarding whether English majors should receive specialized training on dictionary usage. Alternatively, if a dedicated course is not feasible, sufficient time within existing courses could perhaps be allocated to cover this topic. The strategies revealed by the respondents, particularly their tendency to only focus on the equivalent and quickly switch to the next dictionary, are cause for serious concern. Previous research on dictionary use among translators, such as Livbjerg and Mees (2003), Mackintosh (1998), Meyer (1988; 1990), Roberts (1992), and Varantola (1998), has also emphasized the need for such training. Students should be educated about various types of dictionaries and how they complement one another. Without this knowledge, they may continue to search for specialized vocabulary in general-purpose dictionaries that were not designed for their specific needs. Similarly, if students understand that potential translations can be found within illustrative examples, they can save time by avoiding unnecessary switches between dictionaries. Fortunately, the majority of translation trainers are aware of the typical performance errors exhibited by this group of learners. Furthermore, many trainers have practical experience in translation, enabling them to offer valuable guidance to students on which resources work best in different situations of communicative deficit.

Finally, the evaluation conducted above has a significant limitation in that it only reflects the performance of dictionaries and other translation tools in a very basic translation task: providing translation equivalents for a set of terms taken out of context. While such exercises are commonly found in popular translation manuals, it would be interesting to explore whether students could successfully isolate and translate two-element terms, like those used in the study, when they appear within sentences rather than in isolation. Furthermore, having students generate their own equivalents instead of simulating what they would likely do when asked to translate could shed additional light on the 'various complications' (Hartmann, 2001, p. 91) that may arise during the process of consulting a dictionary or other reference tool until finding a solution to the initial translation problem.

5. Conclusions

Whenever the topic of dictionary use arises, whether in the context of foreign language learning or translation, it ultimately confronts us with a fundamental question: whether students who use dictionaries are practising a skill that will benefit them beyond the classroom. If this question is answered positively, the next logical step is to determine whether they have mastered the skill to a sufficient degree, and if not, what steps a teacher can take to develop their proficiency as dictionary users.

The analysis conducted in this study reveals that the participants may have lacked proper instruction in dictionary use. Such instruction aims to transform naive, untrained users into individuals who are aware of the range of reference works they can consult in situations of communicative deficit and understand that the information they seek may be found in various parts of a dictionary entry. The problem lies in the fact that despite the availability of numerous technological innovations for dictionary compilers today, including online dictionaries, the reliability of dictionaries still varies significantly. This brings us back to a postulate that has been recognized in lexicographic literature since the 1970s when user-oriented studies were first conducted: a successful reference act relies on two elements – a reliable dictionary and a skilled user. While the responsibility for the first element lies solely with dictionary compilers, the second element requires greater involvement from teachers, regardless of the specific activity (reading, writing, translation) in which students encounter linguistic problems they cannot solve on their own.

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