

Free Online Machine Translation: Use and Perceptions by Spanish Students and Instructors

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Abstract

This article reports the results of a survey-based study on the use of and attitudes, perceptions, and beliefs about Google Translate and similar free online machine translation (FOMT) tools by students and instructors in university Spanish programs. The results of surveys administered to both groups are presented and discussed relative to the investigators' research questions, which focus on FOMT tool usage and student and instructor views regarding their accuracy and reliability, questions of academic integrity, and implications for foreign language (FL) teaching and learning. Taking those results into account, the authors propose a preliminary framework for developing best practices for addressing FOMT tool use in FL learning contexts. Chief among their recommendations is that students in FL teaching methods courses should receive training regarding their potential pedagogical applications.

Introduction

In today's world of ubiquitous Wi-Fi connections, laptops, tablets, and smartphones, foreign language (FL) instructors and students have at their fingertips

a broad array of free online resources for translators (FORTs), including powerful machine translation (MT) websites and apps. Despite the fact that a fair amount of research was conducted on pedagogical applications of MT in the 1990s and early 2000s (Anderson, 1995; García, 2010; Kliffer, 2005; Lewis, 1997; McCarthy, 2004; Musk, 2014; Niño, 2008, 2009; Richmond, 1994; Somers, 2001, 2003; Somers, Gaspari, & Niño, 2006; Steding, 2009; Williams, 2008), the rapidly increasing visibility, user-friendliness, and reliability of FORTs—and free online MT (FOMT) solutions, such as Google Translate, in particular—and the widespread perception that their use by students has risen sharply, seem to have caught much of the FL teaching profession off guard, with reactions ranging from cautious optimism to suspicion and even disdain. Indeed, discussions of the topic by FL instructors often focus on the assumed detrimental effects of this perceived increased in FORT use by students, such as concerns regarding the quality (accuracy, reliability, etc.) of FOMT output, issues relating to academic integrity, and the impacts reliance on these tools might have on language learning.

Although a few researchers have attempted recently to gauge the extent to which students actually use FORTs and document their views of them (Clifford, Merschel, & Munné, 2013; Niño, 2009; Xu & Wang, 2011), concerns about learner use of these tools seem to stem largely from anecdotal evidence and the observations and assumptions of FL instructors. An informed understanding of these concerns and any effective pedagogical response to them must rely on a sound understanding of the kinds of tools available to students as well as credible data from both students and instructors. Accordingly, the purpose of this article is to share data collected from students and instructors about their use of and their attitudes, perceptions, and beliefs about FOMT tools such as Google Translate in an effort to provide a more accurate, data-supported picture of this issue. A secondary purpose of this research is to provide a preliminary set of recommendations for addressing FOMT tool use. This paper is organized as follows: Section 2 provides an overview of previous research conducted on issues central to the present project. Section 3 summarizes the methodology used in the study. Section 4 presents and discusses the survey results relative to the research questions. Section 5 outlines a preliminary framework for developing best practices for the use of FOMT tools in FL learning contexts.

Review of Literature

Free Online Translation Resources

Because not all FL instructors are familiar with the range of FORTs available to their students, an overview of these resources and an explanation of how FOMT tools work will be helpful before reviewing how researchers have looked at MT use in educational contexts and the importance of gathering data on learner and instructor perceptions. The rubric FORT includes any free online resource used by translators, such as Internet search engines, monolingual and bilingual dictionaries, glossaries, parallel corpora, bilingual concordancers (parallel text alignment tools), peer-to-peer (P2P) language usage forums, sophisticated

computer-assisted translation (CAT) suites that combine multiple functions (terminology management, translation memory, etc.), and FOMT solutions, such as Google Translate. Research conducted on FL students at Duke University in 2011 and 2012 confirmed the prevailing suspicion among FL instructors that students overwhelmingly favor Google Translate over other FORTs: 81% of the respondents reported using Google Translate to support their language learning (Clifford et al., 2013, p. 111), a significantly higher percentage than that of any other tool. Accordingly, the research project described in this article was designed to focus on Google Translate by using in its questionnaires the terms *Google Translate* or *Google Translate or similar tools* exclusively (see Appendices A and B).

Google Translate is available on the Web and as a smartphone application. Both formats can accept input and generate output in text and voice in dozens of languages. It is described as a “free translation service that provides instant translations between dozens of different languages” (Google), a characterization which squarely fits standard definitions of MT as “computerised systems responsible for the production of translations from one natural language into another, with or without human assistance” (Hutchins & Somers, 1992, p. 3). As Google Translate and similar tools have gained prominence, updated labels, such as “free online MT” (FOMT) and “Web-based machine translation” (WBMT) have emerged in the literature (Niño, 2009; Williams, 2008). Framing Google Translate as an MT solution is important to attaining a basic understanding of how it works. MT systems are typically described as applying either ruled-based and statistical (or example-based) logic. Rule-based MT systems work by filtering source text input through bilingual dictionaries and subjecting their segments to large, pre-programmed inventories of rules, whereas statistical MT systems are based on “machine-learning technologies” and rely on “large volumes of parallel human-translated texts from which the MT engine can learn” (Steding, 2009, p. 184). Google Translate exemplifies the latter approach, as its website explains in layman’s terms: “By detecting patterns in documents that have already been translated by human translators, Google Translate can make intelligent guesses as to what an appropriate translation should be” (Google). Bowken (2002) makes a connection between this approach and output quality, noting that because statistical MT reflects a “better understanding of the strengths of machines” than earlier methods, errors are “less common and considerably less outrageous” than in the past (p. 3).

MT in Educational Settings

Long before MT found its way into educational settings, human translation (HT) had been a hallmark of FL teaching and learning, particularly during the late 19th century heyday of the grammar-translation method. Language teaching professionals vigorously debated the value of translation as a language learning and assessment activity during the first few decades of the 20th century, but professional consensus had turned against it by the 1960s after the emergence of the audio-lingual method and widespread acceptance of the four-skills model (Aarts, 1968). However, translation was never fully banished from the FL classroom

and, as Károly (2014) notes, an updated view of translation “as a communicative activity” which develops students’ communicative competence in their native and target languages has led to several recent studies proposing “the rehabilitation of this useful skill in foreign language teaching” (p. 90).

As MT systems transitioned from research labs to the marketplace, interest in their applications in educational settings grew. As noted above, a number of articles addressing the pedagogical potential, uses, and implications of MT have appeared since the early 1990s. This research spans two related areas—translator training and FL education—which have tended to be treated separately, although Somers (2001) and others focused on the first area recognized that MT and CAT tools might be deployed as computer-assisted language learning (CALL) tools. Several researchers addressing MT in translator training programs have emphasized the importance that translators-in-training be able to use state-of-the-art MT tools (Lewis, 1997; McCarthy, 2004; Somers 2001, 2003; Xu & Wang, 2011). For instance, Niño (2009) wrote that

one of the main applications of the teaching of MT ... is its use by professional translators who, apart from being proficient in two or more languages, need to know the intricacies of the translation art and be updated on the use of CAT ... tools such as translation memories or MT systems. (p. 242-43)

Other foci of research on MT in translation training include the evaluation of CAT tools and MT output (Belam, 2002; Xu & Wang, 2011) and strategies for their effective and ethical use (McCarthy, 2004).

Key issues that have emerged in research on MT in FL teaching and learning contexts include (1) actual or potential ways of using MT tools as CALL tools, (2) concerns surrounding the potential abuse and/or misuse of MT tools by students, including the detection and prevention of academic dishonesty, (3) recommendations for dealing with the inevitability of student MT use, including pedagogical best practices, and (4) student and instructor perceptions. Early studies addressing the first area involved subjecting problematic MT output to analysis or post-editing as a means of focusing student attention on differences between source and target language constructions (Anderson, 1995; Lewis, 1997; Richmond, 1994). Somers (2003) characterized this strategy as “using MT as bad model” (p. 327), a notion revisited by Niño (2009), who established a helpful four-part model for classifying MT uses which accounts for both translator training and FL education contexts: (1) use of MT as bad model, (2) use of MT as good model, (3) vocational use: translation quality assessment, pre-editing and post-editing, and (4) MT as a CALL tool (p. 242). Researchers have also begun to investigate how MT tools might support FL writing, comparing error patterns and other factors in MT-assisted and unassisted target language writing (García, 2010; Kliffer, 2005; Niño, 2008).

Studies addressing MT accessibility and its abuse (academic dishonesty) include Somers et al. (2006) and Steding (2009), who identified strategies for recognizing indicators of unauthorized FOMT use, reacting to it, and preventing it. Significantly, Clifford et al. (2013) marked the first systematic attempt to

gather information from FL students and instructors regarding their views on the appropriate uses of MT. Taking a slightly different tack, other researchers have pointed out the potential for misuse of FOMT tools owing to students' lack of understanding of their purposes (Williams, 2008) and their inability to evaluate their output (Niño, 2009). Musk (2014) highlighted another potential pitfall for students—that WBMT facilitates target language avoidance: “Google affords readily accessible opportunities for students to exercise their language preferences in order to ‘get the job done’” (p. 129). The authors who have gone as far as to recommend best practices for MT use in translator training and FL contexts include McCarthy (2004), whose discussions with students resulted in 12 “solutions” for dealing with the inevitability of MT use; Williams (2008), who suggested activities for using MT websites to augment students' electronic literacy; Steding (2009), who outlined four strategies for preventing MT-based cheating, including the creation of “smart assignments” (p. 188); and Niño (2009), who proposed a number of “good practices” and “bad practices” (p. 247-48).

Learner and Instructor Attitudes, Perceptions, and Beliefs about MT

In the introduction to their volume on beliefs about second language acquisition (SLA), Kalaja and Barcelos (2003) observed that interest in learner beliefs about language acquisition is fairly recent, an outgrowth of a shift of focus in SLA research in the 1980s toward individual learner differences, such as motivation, learning strategies, and aptitude (p. 1). Wesley (2012) provided a wide-ranging review of research on learner attitudes, perceptions, and beliefs, noting that investigators who examine these “unobservable attributes” do so on the assumption that that “these thoughts are pertinent and important to understanding how languages are learned and taught” (p. S98). Indeed, Brown (2009) argued that input from FL students and instructors is a line of research investigators “should continue to pursue because L2 teaching practices will change over time and idiosyncratic perceptions of it among teachers and students will remain a reality in the L2 classroom” (p. 57). Although few of the studies focusing on MT use in FL contexts referenced above took into consideration student and instructor attitudes, perceptions, or beliefs about FOMT use, those that did are relatively recent (Clifford et al., 2013; Niño, 2009; Xu & Wang, 2011).

Xu & Wang (2011) set out to explore the “attitudes and knowledge” of Chinese students in translation training program about a variety of online translation resources, including online corpora, search engines, and professional-grade CAT suites (p. 63). Their survey of 100 students included questions about preferred translation techniques, awareness of different CAT tools, output quality (accuracy and reliability), convenience and frequency of use, and the importance of integrating such tools into translator training curricula. The study revealed two key findings, “that translation students rely more on electronic resources than non-electronic ones ... and that the underlying reason is convenience, not accuracy” (Xu & Wang, 2011, p. 79). Although these findings likely support the suspicions of many FL instructors, their relevance to FL education contexts is limited since the subjects were translators in training, not typical FL students. In a

study more narrowly focused on FOMT, Niño (2009) surveyed 16 post-secondary Spanish students who had completed a ten-week course that involved the post-editing of MT output. These students were asked a handful of questions about MT, including whether they planned to use it in the future, if they believed it to be a useful language learning tool, and whether they thought MT post-editing had improved their Spanish in general and their L2 writing in particular. A group of 30 FL “tutors” also responded to questions about their awareness and personal use of MT and the degree to which they had integrated it into their teaching. Ninety-three percent of the students reported using FORTs for post-editing, and 69% said they planned to use FOMT in the future. While 70% of tutors reported using MT as a “learning/teaching tool,” only 23% had used it in their lessons (p. 250). Niño concluded that “overall, the use of MT and free online MT in FL learning was perceived as an innovative and positive learning experience both by language tutors and language learners” (2009, p. 253). She also noted an emphasis on the instructional value of introducing advanced FL students to MT in ways that encourage them to understand “the deficiencies of free online MT output” and raise their “awareness as to the complexity of translation and language learning.” (Niño, 2009, p. 253). Clifford et al. (2013) reported the first large-scale effort to collect data on FL learner and instructor use and perceptions of FOMT. In phase 1 of the study, researchers at Duke University asked 356 students enrolled in Spanish classes a few basic questions regarding frequency of MT use, reasons and purposes (assignment/task type) for using it, and beliefs about MT accuracy. Those inquiries were substantially expanded and refined in phase 2, which surveyed 905 students of Spanish and three other languages, as well as 43 FL instructors. Both groups responded to items about MT tool use, including questions relating to academic dishonesty, output quality, and implications for FL learning and teaching. Key findings included that students use MT on a regular basis for specific purposes, consider it to be helpful to their language learning, and are generally aware that it produces errors. Instructor responses confirmed that “faculty are skeptical of a positive impact on language learning” and that they see MT integration as being more useful in advanced courses (p. 116). In an effort to explore some of the issues addressed in these initial studies in greater depth and to examine others related to them, the following research questions were proposed for the present study:

- How do Spanish students use Google Translate and similar FOMT tools and what are their attitudes, perceptions, and beliefs regarding the quality of FOMT output, the ethicality of using these tools, and their implications for FL teaching and learning?
- How do Spanish instructors use Google Translate and similar FOMT tools and what are their attitudes, perceptions, and beliefs regarding the quality of FOMT output, the ethicality of using these tools, and their implications for FL teaching and learning?
- How accurate are student and instructor beliefs about each other’s use of and attitudes, perceptions, and beliefs about FOMT use?

Methods

Participants

A total of 139 students and 41 instructors in university Spanish programs participated in this study. However, the results of 11 students and two instructors who did not answer all questions were excluded, yielding final groups of 128 students and 39 instructors. The researchers recruited participants by sending email invitations to instructors requesting that they complete the instructor survey and forward a link to the student survey to their students. Participants in both groups were offered compensation in the form of a chance to win gift cards through a random selection process.

The participants in the student group were 97 females and 31 males enrolled in Spanish courses at five U.S. universities. They ranged in age from 18 to 31, with a mean of 20.52. Their native languages were English (93.75%), Spanish (4.69%), and other (1.56%). The student group consisted of 127 undergraduate students and one graduate student, including 70 whose program emphases were language-related, and 49 Spanish minors. The breakdown in terms of formal, classroom study of Spanish was as follows: one to two semesters, 3.13%; three to four semesters 7.81%; five to six semesters, 10.16%; seven to eight semesters 10.94%; nine to 10 semesters: 23.44%; and 11 semesters or more, 44.53%. Thirty-eight students (29.69%) had taken a course with a significant focus on translation and 21 (16.41%) reported having received some training in CAT or MT tools.

The participants in the instructor group were 30 females and nine males from six U.S. university Spanish programs. They ranged in age from 24 to 69, with a mean of 35.21. Their native languages were English (66.67%), Spanish (28.21%), and other (5.13%). Highest degree attained varied as follows: bachelor's, 12.82%; master's, 53.85%; and doctorate, 33.33%. By area of specialization the breakdown was: generalist, 10.26%; literature, 33.33%; linguistics, 38.46%; translation, 2.56%; and other, 13.38%. Distribution for the group in terms of teaching experience (in years) was: less than five, 51.28%; five to 10, 17.95%; 11-15, 12.82%; 16-20, 7.69%; and more than 20, 10.25%. Fifteen of the instructors (38.46%) had taken a course with a significant focus on translations studies or translation theory, but just two (5.13%) had any training in CAT or MT tools.

Materials

Participants responded to one of two online surveys designed to collect data on each group's use of and attitudes, perceptions, and beliefs about Google Translate and similar FOMT tools (see Appendices A and B for complete surveys). The student survey included 12 items designed to elicit the demographic and background information summarized in the preceding section, as well as the following: five items addressing student awareness and use of FOMT tools, four items addressing their assessment of FOMT output quality, four items addressing the ethicality or appropriateness of FOMT use, one multi-part item addressing the relationship between FOMT use and FL teaching and learning, one multi-part item asking them to characterize instructor views about FOMT, one open-ended response item, and two

items dealing with compensation. The instructor survey included 16 items designed to elicit the demographic and background information summarized in the preceding section, as well as the following: five items addressing their use of FOMT tools, four items addressing their assessment of FOMT output quality, four items addressing the ethicality or appropriateness of FOMT use, one multi-part item addressing the relationship between FOMT use and FL teaching and learning, four items asking them to characterize student use of and views about FOMT tools, one multi-part item focused on their own views regarding FOMT, and one open-ended response item; and two items dealing with compensation.

Procedures

Participants in the student and instructor groups described above were invited to take part in this research on a voluntary basis during the spring and fall semesters of 2014. The student and instructor questionnaires were built and administered via a commercial online survey platform (SurveyMonkey). Each survey included an informed consent form, which disclosed the purposes, procedures, risks, and benefits of the study and asked respondents to confirm that their participation was voluntary. The student and instructor questionnaires ran simultaneously. Data collection was managed through the online survey platform, which produced raw numbers and percentages for each option on every question. The data presented in the subsequent section were collected on October 10, 2014.

Results and Discussion

This section presents and discusses the survey results in relation to each of the three original research questions and their subcategories (e.g. use of FOMT tools and views regarding FOMT output quality, ethicality of use, and implications for FL teaching and learning) to which they were coded. To facilitate comprehension of the large amount of data generated, figures indicating the percentages of respondents who selected each option are included. Responses to the open-ended question on both surveys are provided in Appendices C and D.

4.1 RQ1: How do Spanish students use Google Translate and similar FOMT tools and what are their attitudes, perceptions, and beliefs regarding the quality of FOMT output, the ethicality of using these tools, and their implications for FL teaching and learning?

Student Use of FOMT Tools

Nearly all of the student respondents (97.66%) reported some use of FOMT tools, with a high majority of 74.22% reporting occasional (38.28%) or frequent (35.94%) use. In terms of frequency by assignment type, the highest percentage of students reported using FOMT tools occasionally or frequently for writing assignments (85.16%), followed by translation assignments (70.08%) and presentations (68.76%) (Figure 1). With regard to workbook or online lab exercises, 52.67% of students said they never

or infrequently use FOMT tools. Furthermore, approximately 30% of students use FOMT tools at least occasionally on all assignment types.

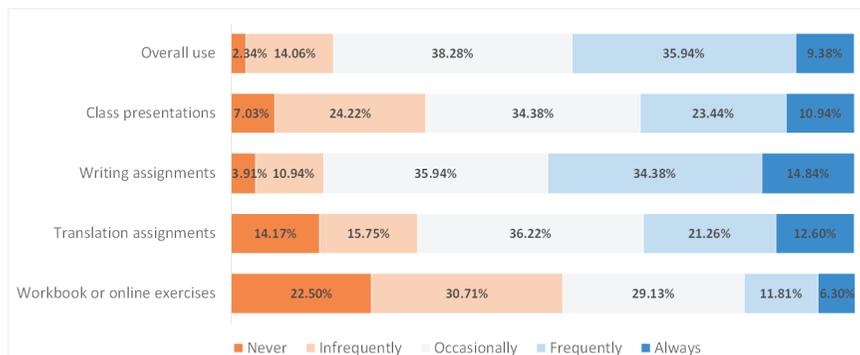


Figure 1. Student FOMT Use: Overall Frequency and Frequency by Assignment Type

In terms of frequency by purpose, high percentages of students reported using FOMT tools often (frequently or always) to verify hunches (70.31%) and for help with vocabulary or terminology (56.26%). Just 13.28% reported using FOMT tools with the same frequency for help with grammar structures, whereas 67.97% reported never or infrequently relying on FOMT tools for this purpose. In terms of translation unit length, students reported using FOMT tools most often (frequently or always) to translate individual words (65.08%). In contrast, very high percentages of students reported never or infrequently using FOMT tools to translate entire paragraphs (85.43%) or texts (88.28%).

Student Views on the Quality of FOMT Output

Students judged the overall accuracy of Google Translate to be higher (71.10% as somewhat accurate or accurate) than its capacity to convey the content or message of a source text (59.16%) or to handle grammatical structures (34.38%) (Figure 2).

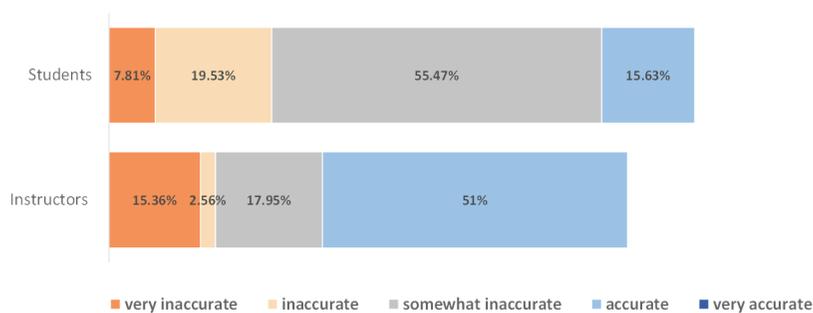


Figure 2. Student and Instructor Perceptions of Overall Accuracy of Google Translate (English to Spanish)¹

In terms of accuracy by genre or text type, 64.06% of students said FOMT tools could be used to somewhat effectively (48.22%) or effectively (14.84%) translate informative/technical texts. The percentages indicating the same degree of confidence were substantially lower for persuasive/advertising texts (41.40%) and artistic/literary texts (28.12%) (Figure 3).

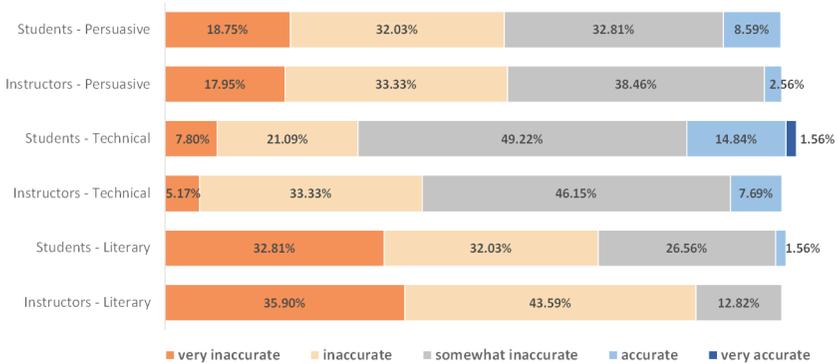


Figure 3. Student and Instructor Perceptions of Google Translate Accuracy (English to Spanish) by Genre

Translation segment length also affected students’ judgment of FOMT accuracy (Figure 4). For example, a 78.91% majority of students indicated that FOMT tools can be used to somewhat effectively (53.91%) or effectively (25.00%) render individual words, while similar majorities of 68.75% and 77.45% indicated that they are very ineffective or ineffective at rendering paragraphs or entire texts, respectively.

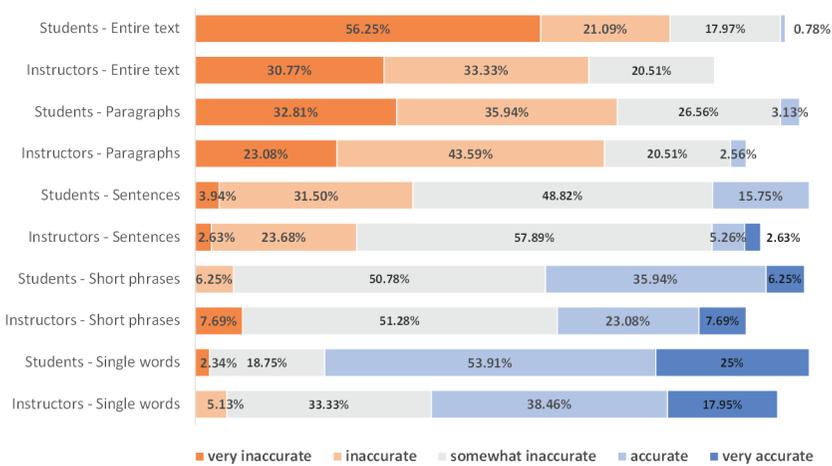


Figure 4. Student and Instructor Perception of Google Translate Accuracy (English to Spanish) by Segment Length

In addition to perceptions of accuracy, we asked students to assess the overall reliability of translations generated by Google Translate. A majority of students (65.52%) characterized them as somewhat reliable (57.81%) or reliable (7.81%), with a 34.48% minority judging them to be somewhat unreliable (28.13%) or very unreliable (6.35%). They rated the overall reliability of Google Translate-produced translations 3.67 on 0-5 point scale.

Student Views on the Ethicality of FOMT Tool Use

With regard to the ethicality or appropriateness of using FOMT tools to complete Spanish assignments, most students (86.72%) indicated that whether their use constitutes cheating depends on how they are deployed. Just 12.50% of students reported seeing nothing wrong with using FOMT regardless of use. Students' ethicality judgment varied by assignment type (Figure 5). For example, a combined 74.80% judged FOMT use on writing assignments to be somewhat ethical (44.09%) or completely ethical (30.71%), with presentations and workbook/lab assignments trailing at 68.51% and 65.63%, respectively. Just 38.28% judged FOMT tool use on translation assignments to be somewhat or completely ethical.

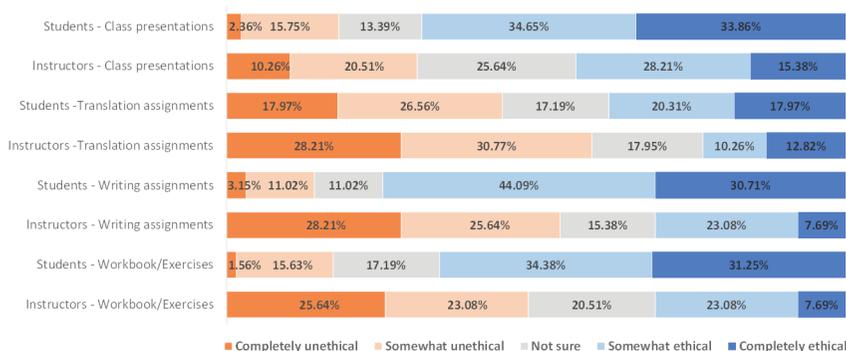


Figure 5. Student and Instructor Assessments of FOMT Ethicality by Assignment Type

Purpose and translation segment length also affected students' judgment of FOMT ethicality. High percentages of students reported that using FOMT tools to verify their own hunches (85.04%) or for help with vocabulary (78.91%) is completely ethical. Whereas 77.34% judged using FOMT to translate individual words as completely ethical, 32.03% and 51.56% indicated that using FOMT to translate paragraphs or entire texts is completely unethical. In terms of the relationship between frequency of use and academic dishonesty, students associated cheating with more frequent usage rates (Figure 6).

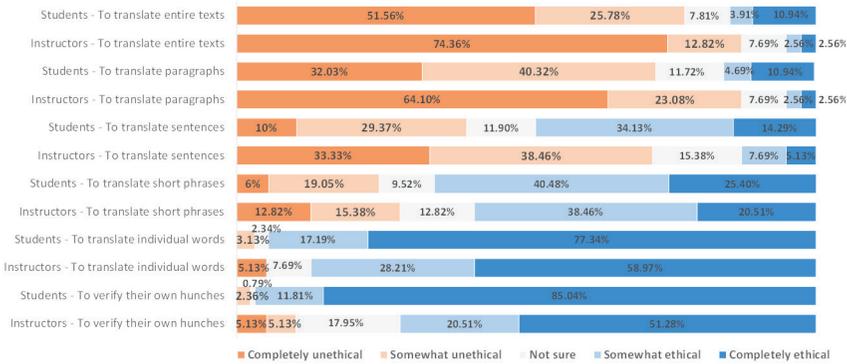


Figure 6. Student and Instructor Assessments of FOMT Ethicality by Translation Segment Length

Student Views on FOMT Tools and Language Learning

On the issue of how FOMT use relates to FL learning, a majority of students (55.47%) agree (40.63%) or strongly agree (14.84%) that use of FOMT tools has a positive impact on the language learning process. A majority (60.16%) also believe it would be helpful if instructors spent time teaching strategies for maximizing the effectiveness of FOMT tools.

Discussion of Student Use and Views

Despite a lack of training relative to MT or CAT tools, students use them frequently across a broad spectrum of assignment types. However, the results do not suggest that students are predisposed to use FOMT tools uncritically or irresponsibly. Their high degree of confidence in the overall effectiveness of FOMT is tempered by the view that FOMT tools are better at handling short lexical items than grammatical structures or longer segments. Likewise, students hold nuanced views about FOMT tool use and academic integrity. They see FOMT tools as less ethically problematic when used less frequently, for consultation or verification purposes, or to translate individual lexical items. The idea that students see frequent use of FOMT to translate entire paragraphs or texts as appropriate is not supported.

The data confirm that students use FOMT frequently on writing assignments but suggest that they generally do so in limited ways. However, it is somewhat surprising that students report using FOMT tools more frequently on writing assignments than on translation assignments, a purpose they are arguably better suited for. This may relate to students' lack of training in translation in general and with respect to MT and CAT tool use in particular. It is also important to underscore that most students see FOMT as having a positive impact on their language learning and want instructors to cover strategies for effective use.

4.2 RQ2: How do Spanish instructors use Google Translate and similar FOMT tools and what are their attitudes, perceptions, and beliefs regarding the quality of FOMT output, the ethicality of using these tools, and their implications for FL teaching and learning?

Instructor Use of FOMT Tools

A majority (82.05%) of the Spanish instructors surveyed reported FOMT tool use for personal or teaching purposes, with a combined 51.29% reporting occasional (23.08%) or frequent (28.21%) use (Figure 7). However, just 7.69% reported having given assignments that directed students to use FOMT tools.

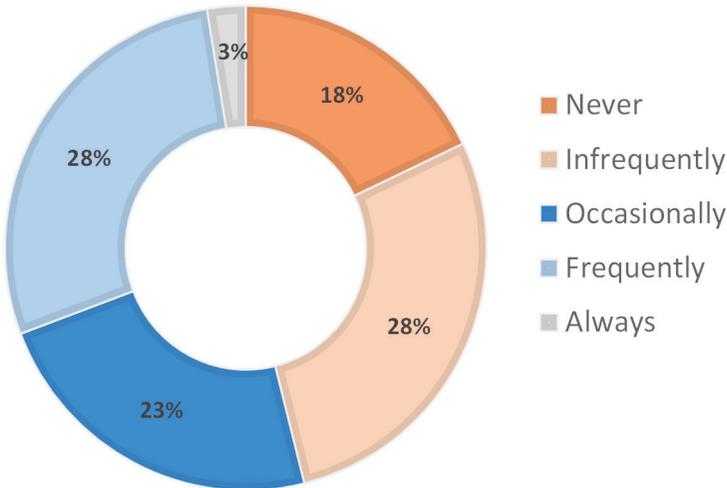


Figure 7. Frequency of Instructor Use of FOMT Tools

Instructor Views on the Quality of FOMT Output

As with the student group, instructors judged the overall accuracy of Google Translate to be higher (64.10% as somewhat accurate or accurate) than its capacity to convey the content or message of a source text (59.16%) or to handle grammatical structures (51.28%) (Figure 2). In terms of accuracy by genre or text type, 53.84% of instructors said FOMT tools could be used to somewhat effectively (46.15%) or effectively (7.69%) translate informative/technical texts (Figure 3). The percentages indicating the same degree of confidence were substantially lower for persuasive/advertising texts (41.02%) and artistic/literary texts (12.82%). As with the student group, translation segment length affected instructors' judgment of FOMT accuracy (Figure 4). For example, a 56.41% majority of instructors indicated that FOMT tools can be used to effectively (38.46%) or very effectively (17.95%) render individual words, but larger majorities indicated that they are very ineffective (66.67%) or ineffective (64.10%) at rendering paragraphs or entire texts. Regarding the overall reliability of translations generated by Google Translate, they

were less confident than students: 48.71% of instructors characterized them as somewhat reliable (46.15%) or reliable (2.56%), whereas a 41.03% minority judged them to be somewhat unreliable (30.77%) or very unreliable (10.26%). They rated the overall reliability of Google Translate-produced translations 3.21 on 0-5 point scale, also lower than students (3.67).

Instructor Views on the Ethicality of FOMT Tool Use

With regard to the ethicality or appropriateness of using FOMT tools to complete Spanish assignments, most instructors (82.05%) indicated that whether their use constitutes cheating depends on how they are deployed (Figure 8).



Figure 8. Instructor Beliefs Regarding the Ethicality of Student Use of FOMT Tools on Spanish Assignments

Later in the survey, 87.81% of instructors reported a similar view to a question worded slightly differently (compare questions 27 and 36 of Appendix B). As with students, the ethicality judgment of the instructor group varied by assignment type (Figure 5). The highest percentage of instructors indicating that FOMT tool use is somewhat or completely ethical corresponded to presentations (43.59%), whereas 31.77% rated FOMT tools use on both workbook/lab assignments and writing assignments somewhat or completely ethical. Just 23.08% judged FOMT tool use on translation assignments to be ethical or completely ethical. Translation segment length also affected instructors' judgment of FOMT ethicality (Figure 6). A high majority of 87.18% judged using FOMT to translate individual words as completely ethical, but the exact same percentage indicated that using FOMT to translate either paragraphs or entire texts is completely unethical. In terms of the relationship between frequency of use and academic dishonesty, instructors associated cheating with more frequent usage rates.

Instructor Views on FOMT tools and Language Learning

On the issue of how FOMT use relates to FL learning, just 30.77% of instructors agreed (none strongly agreed) that FOMT tool use has a positive impact on the language learning process. However, a majority (64.10%) believe it would be helpful if instructors spent time teaching students strategies for maximizing the effectiveness of FOMT tools (Table 1).

| | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|--|-------------------|----------|---------|--------|----------------|
| It would be helpful if <u>we</u> instructors would spend more time teaching students strategies for maximizing the effectiveness of using FOMT | 5.13% | 7.69% | 23.08% | 33.33% | 30.77% |
| It would be helpful if <u>us</u> instructors would spend more time teaching <u>us</u> students strategies for maximizing the effectiveness of using FOMT | 6.25% | 11.72% | 21.88% | 29.69% | 30.47% |

Table 1. Instructor and Student Beliefs Regarding the Usefulness of Instruction on FOMT Tool Use

Discussion of Instructor Use and Views

In many ways, trends in the instructor data aligned with those in the student data. For example, when judging the FOMT output quality, instructor views mirrored those of students in terms of the reliability of Google Translate translations by text type, and they agreed that FOMT is more accurate with the translation of individual words than longer segments. As with students, instructors generally do not consider the use of FOMT tools translate individual words as unethical, and they also equated less frequent use with higher degrees of appropriateness. Another coincidence was the instructor view that among the assignment types presented FOMT use on translation assignments was seen as least ethical.

Despite these broad similarities, however, differences in percentages between the two groups indicated that instructors use FOMT less frequently than students, are generally less confident in the reliability and accuracy of FOMT output, are more prone to see its use as unethical, and more skeptical about its potential in FL learning contexts. Two key differences in particular are worth noting: (1) students and instructors expressed significant disagreement over the ethicality of using FOMT tools to complete writing exercises and (2) students were much more confident than instructors that FOMT tool use has a positive impact on their language learning.

4.3 RQ3: How accurate are student and instructor beliefs about each other's use of and attitudes, perceptions, and beliefs about FOMT use?

Because of the potential for misperceptions to interfere with the development and adoption of sound pedagogical practices in this arena, the researchers were interested in gauging the general accuracy of student and instructor beliefs regarding each other's views on FOMT use. To that end, a series of questions were posed to facilitate comparisons between student predictions and instructor responses and vice-versa. The most salient results are summarized below.

Student Characterizations of Instructor Views Compared to Actual Instructor Responses

The data revealed a disconnect between students and instructors regarding awareness of MT policies and instructor views on MT output quality. The

percentage of students who reported being aware of instructor policies relating to MT use (32.03%) was well below the percentage of instructors who reported clearly articulating such policies (61.54%). Similarly, just 46.09% of students reported awareness of instructor views on the effectiveness of MT tools, while 61.54% of instructors indicated that they share such views with students. Students underestimated instructors' interest levels in FOMT tools and overestimated the percentage who view FOMT use as always being unethical. For example, just 12.06% of students said they thought instructors were interested in FOMT tools, yet 56.41% of instructors indicated they were interested in FOMT tools and would like to learn more about them. On the issue of ethicality or academic integrity, 26.77% of students said that instructors consider FOMT use to be cheating under all circumstances, whereas just 5.13% of instructors reported that view. Likewise, instructor views about the pedagogical potential of FOMT tools were much more positive than students predicted. For instance, 76.92% of instructors agreed that FOMT use may be helpful to the language learning process, but just 40.16% of students attributed that view to instructors.

One of the most striking contrasts involved the question of whether students thought instructors favor encouraging or discouraging FOMT use. Whereas just 37.80% of students said that instructors would be interested in encouraging students to learn to use FOMT tools in effective and appropriate ways, 69.23% held that view. Interestingly, that figure is actually higher than the combined percentage (60.16%) of students who agreed (29.69%) and strongly agreed (30.47%) that it would be helpful if instructors would teach them strategies for maximizing the effectiveness of FOMT use.

Instructor Characterizations of Student Views Compared to Actual Student Responses

Instructors overestimated the frequency with which students report using FOMT tools in general (Figure 9).

For instance, 51.28% of instructors said students use FOMT tools frequently, compared to 35.94% of students reporting that behavior. Instructors also overestimated the degree to which students view MT output as reliable, with 76.92% of respondents indicating students consider FOMT output to be accurate and reliable, compared to a combined 65.62% of students who deem it somewhat reliable (57.81%) or reliable (just 7.81%).

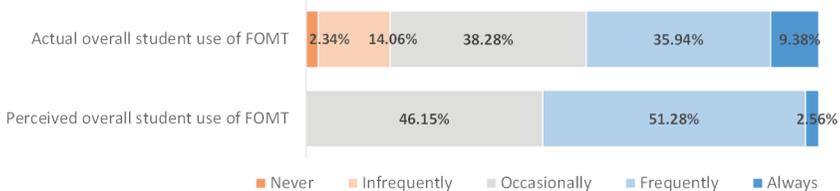


Figure 9. Comparison of Instructor Beliefs and Reported Student Use of FOMT

On the question of the ethicality of FOMT tool use by students, nearly the same percentage of instructors and students indicated that whether or not usage constitutes cheating depends on how the tools they are used (instructors: 87.18%; students: 86.72%). However, the percentage of instructors indicating that students see nothing unethical or inappropriate about FOMT tool use (74.36%) was substantially higher than the percentage of students who expressed that view (12.50%). Instructors also overestimated the extent to which students believe FOMT tools to be helpful to FL learning: 69.23% of instructors thought students see FOMT tools as helpful to the language learning process, well above the combined total (55.47%) of students reporting that they agreed (40.63%) or strongly agreed (14.84%) with that view.

As these data reveal, student and instructor characterization of each other's views about FOMT tool use were largely inaccurate, suggesting that misconceptions abound in both groups. In general, students characterized instructor views of FOMT tool use as being more negative than those reported by instructors. Likewise, instructors were quick to characterize students as overly reliant on MT and ambivalent regarding issues of academic integrity. There were, however, two significant points of common ground: (1) the near consensus that the issue of ethicality or academic integrity hinges on how FOMT tools are actually used and (2) clear majorities in both groups which favor training by instructors on appropriate and effective uses of FOMT tools in FL learning contexts.

Recommendations

The foregoing discussions clarify a number of issues concerning student use of and views about FOMT tools that provide a better foundation for formulating responses than mere anecdotal evidence and assumptions. Taken collectively, the study's results strongly suggest that recommendations for successful pedagogical responses to the reality of FOMT tool use by students must take into consideration the fact that students have almost no training in the use of these tools, that they nevertheless use them quite frequently, that they are confident—perhaps overly so—in their accuracy and reliability, that they do, in fact, associate certain types of uses with academic dishonesty, and that they are willing to look to their instructors for direction.

The first issue that emerged in this study is the need for a framework that addresses the pedagogical implications of FOMT tool use. Only very low percentages of both groups reported having ever received any training in the use of MT or CAT tools. This kind of training is certainly provided in specialized translator training programs but is generally not incorporated into FL teaching methods courses, a serious oversight given the frequency with which students use FOMT tools to support their language learning. Instructors should familiarize themselves with the intended purposes, features, strengths, and weaknesses of the most frequently used FORTs so that they are better equipped to address them with students. Student responses to the open-ended questions indicated that in addition to FOMT solutions they often consult P2P usage forms such as those hosted at WordReference.com. Once instructors have obtained a broader and

deeper understanding of FOTRs, they should thoughtfully and systematically consider how such tools relate to their own views on FL learning and begin to assess what roles, if any, FORTs might play in their teaching. Taking into consideration student behaviors and views such as those presented in this study, instructors should determine the kinds of FOMT tool use they will prohibit or allow in a given class, or even on certain types of assignments. They should clearly articulate rules and consequences to their students, both in course syllabi and during in-class discussions. Finally, to help students comply with established guidelines, instructors should help them to understand how different kinds of FORTs were meant to be used and demonstrate a variety of ineffective and effective applications or strategies, pointing out factors (e.g. unit or segment length and complexity, text type, task or purpose, assignment type, etc.) that may affect output quality.

Notes

1. The percentages of students and instructors who selected the option “not sure” on questions relating to perceptions of accuracy are not included in these figures.

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