Investigating Iranian EFL Student Teachers' Attitude toward the Implementation of Machine Translation as an ICALL Tool

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Abstract

This quantitative study aimed to investigate Iranian EFL student teachers' perceptions on the use of Machine Translation (MT) for foreign language learning in academic context. To this end, 107 EFL student teachers from a women-only state university in Tehran, Iran, completed a recently developed and validated questionnaire in the field. The findings revealed that most participants were familiar with digital technology including MT and its different types such as Google Translate (GT). Satisfied with MT output, the majority of the participants in the study installed MT apps on their smartphones or used its website on their computers to complete assignments or to translate from Persian to English and vice versa. However, they were neutral about whether their instructors confirmed their MT use, or whether they preferred their teachers know they use MT or not. They were also not sure whether consulting MT was against the regulations. The results showed that authorities in the field of foreign language teaching are required to take a positive stand on this emerging technology; in addition, considering the importance of training for both instructors and learners, they should hold workshops for more responsible and effective MT implementation.

1. Introduction

Current Machine Translation (MT) technology is the result of decades of relentless endeavors of Artificial Intelligence (AI) and Computer Assisted Language Learning (CALL). According to The European Association for Machine Translation (EAMT), MT is the use of computers to translate texts from one natural language to another (European Association for Machine Translation, 2022). MT has grasped the attention of a great deal of audience in social media, as has the realm of foreign language education for the last 15 years (Merschel & Munné, 2022). This novelty is constantly upgrading and applying in diverse walks of life, including language acquisition (Chang, 2022). Kannan & Munday (2018) believed that MT has revolutionized the essence of learner-machine interaction but its use in foreign language learning is a point at issue.

A number of scholars have stated that as some instructors are skeptical of and against using MT for language learning and view it as cheating or plagiarism, they strictly forbid language learners to use it. It has to be reminded that there is no official policy regarding this issue to support their ideas and the corresponding decisions made (Groves & Mundt, 2021). Others accuse MT of demotivating learners and making them lazy because of over-reliance on this technology (Darancik, 2016).

On the other hand, most learners see MT use as their legal, civil and natural right and hold universities responsible to set the scene for such interactions (Nino, 2020). MT is at learners' disposal universally (Rowe, 2022) and despite existing shortcomings in its renditions and external restrictions, they support the idea of employing this service for educational purposes. They incorporate it into their linguistic practices as a source of reference for revision and correction (Tsai, 2019, 2020; Lee, 2020), self-directed learning (Van Lieshout & Cardoso, 2022), and foreign language writing improvement (Ryu, Ae Kim, Park, Eum, Chun & Yang, 2022).

This highly controversial issue has been the focus of much of the associated literature over the past decade (Niño, 2008, 2020; Ducar & Schocket, 2018; Maghsoudi & Mirzaeian, 2020; Mirzaeian, 2020, 2021). Taking a closer look at MT literature, we found that as it is consumer-oriented (Urlaub & Dessein, 2022), language learners as the main end users of this tool are best capable of articulating their perceptions of its use to explore the feasibility of using MT for foreign language learning.

Plenty of studies explored foreign language learners' perceptions on the use of MT-assisted language learning in the academic societies of different countries including the US, South Korea, the UK, Turkey, and Japan (Ata & Debrali, 2021; Clifford et al., 2013; Lee, 2020; Case, 2015; Nino. 2009, 2015; Xu, 2022). Yet, investigating Iranian EFL student teachers' perceptions on the use of MT for foreign language learning in higher education is underestimated. Accordingly, the following research questions were formulated for the current study:

1. What are student teachers' perceptions towards the use of MT for language learning?

2. Is there any significant relationship between components of the questionnaire, namely MT familiarity, MT use, fear of detection, and the importance of training among language learners?

2. Literature review

Modern classrooms are equipped with the latest technologies including MT (Cancino & Panes, 2021). MT, primarily launched for non-linguistic purposes (Stapleton, 2019), was first traced in the realm of foreign language learning in the 1990s. Those days DOS-based MT was introduced as a key component in language learning efforts (Anderson, 1995; Parsons, 1996). MT advances from the 2000s up to now led to a remarkable rise in the number of publications focusing on the use of MT in language learning from diverse standpoints (White & Heidrich, 2013; Bahri & Mahadi, 2016; Bin Dahmash, 2020; Rowe, 2022).

As mentioned earlier, there have been long-lasting arguments over the use of MT for language learning among instructors, administrators, scholars, and language learners at all linguistic levels of competence (Mirzaeian, 2022). In what follows, the previous literature may better illuminate this state of affairs.

In the early years of 2000s, Shei (2002) conducted three case studies to report the effects of the MT input pre-editing processes on the cognitive and affective development of Taiwanese language learners. Remarkably, he concluded that undertaking such processes improved learners' self-confidence in language learning which in turn led to further self-observations and self-realizations. Besides, not only MT spelled learners' English language competence through their metaphysically probing into the language of texts but could be viewed as an encouraging and practical way of language learning.

Congruently, to weigh up the pros and cons of the use of MT in foreign language teaching and learning based on language learners' and instructors' claims, Nino (2009) specified MT use in four categories including: 1) MT as a bad model; 2) MT as a good model; 3) MT for vocational purposes; and MT as a CALL tool. The results of this study revealed that MT use was a clever and valuable experience.

Carrying out a mixed-method study, Knowles (2016) probed any probable changes in language instructors' perceptions, confidence, and tendency to integrate MT in language teaching and learning practices as the result of attending a Google Translate introductory intervention. Confirming the previous literature on the topic, she backed the necessity of considering learners' MT use, and empowering instructors to make informed decisions through implementing ad hoc MT use workshops.

Recently, Groves & Mundt (2021) interviewed a number of scholars from two UK universities and discussed some issues of concern including MT policy making and legitimacy in higher education. They concluded that academic staff acknowledge MT use mostly for receptive skills such as reading; but somehow worrisome for productive skills like writing. Moreover, they were of the opinion that despite the absence of an explicit policy around this issue, enacting prescriptive rules may threaten students' reputation and confidence. During the same year, twenty-eight multilingual English as additional language (EAL) students and 14 teachers in Northern Island participated in a qualitative study to explore MT use for both

educational and social lives. Through focus group discussions and interviews researchers found that students and teachers share common views of MT as a practical multilingual tool for free and independent efforts (Kelly and Hou, 2021).

Lately, by studying British secondary school students' online community, called the student room (https://www.thestudentroom.co.uk/) from 2010 to 2020, a researcher discovered that despite the contradictory views due to MT improvements over a decade, learners' enhanced digital literacy brought about a more reliance on Google Translate for oral and written task completions. In addition, learners preferred to consult with peers or the Internet instead of seeking advice from their instructors in case of lack of linguistic knowledge. This study is a notable instance of the fluctuating essence of learners' perceptions during a decade in which Google Translate improved remarkable leaps (Organ ,2022).

Although a considerable number of studies reported positive effects of MT on writing skills (Garcia and Pena, 2011; Kol, Schcolnik & Spector-Cohen, 2018; Rowe, 2022), reading comprehension (Karnal & Pereira, 2015; Mirzaeian, 2020, 2021; Maghsoudi & Mirzaeian, 2020), and vocabulary building (Fredholm, 2019; Van Lieshout & Cardoso, 2022), among the available MT literature, plenty of studies have been devoted to learners' perceptions of MT use in language learning in higher education in European and Asian countries (Briggs,2018; Tsai, 2019, 2020; Merschel & Munné, 2022; Alhaisoni & Alhaysony, 2017; Nino, 2020). Following the aforementioned literature, investigating Iranian EFL learners' perceptions towards MT use in academic context seems crucial.

3.Method

3.1. Research context and participants

This study was conducted at a women-only state university in Tehran, Iran. A total of 114 Iranian female university EFL learners with an average age of 21.2 years filled out the electronic questionnaire survey from September-December 2021. The participants' native language was Persian. They were from multiple fields, such as information science and epistemology, English literature, CALL, TEFL, Psychology, and Plant biology. Most of the participants (N = 98) were bachelor students with a small number of master students (N = 9). Unsurprisingly, almost all the students pursuing a degree in CALL, TEFL, or English literature at any educational level had rated themselves as advanced language learners. Table 1 depicts the relationship between participants' field of study, educational level, and English language proficiency.

Table 1. Relationship between participants' field of study, educational level, and English language proficiency

	Educational level		English language proficiency		
	BA/BS	MA/MS	Beginner	Intermediate	Advanced
English literature	52	0	0	16	36
CALL	0	7	0	1	6
TEFL	0	2	0	0	2

Information science and epistemology	30	0	9	18	3
Psychology		16	0	3	12	1
Plant biology		1	0	0	1	0

3.2. Instrument

EFL Learners' Perception of Machine Translation Questionnaire (Mirzaeian, 2020) was used to elicit Iranian EFL student teachers' perceptions on the use of machine translation as an ICALL tool for foreign language learning in higher education. Cronbach's Alpha obtained for the whole questionnaire was 0.94, and between 0.80-0.91 for the four subscales. The questionnaire had both English and Persian versions and the Persian version was used in the current study.

The final questionnaire consisted of 29 items composing of five sections: 1) Self-reported demographic information regarding respondents' age, gender, field of study, degree, as well as self-perceived English language proficiency; 2) Five Likert-style items designed to elicit information about MT familiarity; 3) Five Likert-style items reported students' MT use; 4) Five Likert-style items providing information about fear of detection; 5) Five Likert-style items highlighting the importance of training. Using this instrument, the participants provide responses from 1 (strongly disagree) to 5 (strongly agree) to present their perceptions regarding MT use in language learning.

Participants completed the electronic questionnaire developed in Google Form during their regular online class time. The electronic version can be accessed via the following link: (https://forms.gle/oowTSXHwtFXjgzXK6) as shown in Figure 1. At the beginning of their ordinary classes, students were invited to voluntarily participate in this survey in person. The researchers ensured meeting ethical considerations and anonymity.

In total 114 valid questionnaires were collected. Of all the administered questionnaires, 7/114 were discarded from data analysis by the researchers, due to their incompleteness. In other words, 107 (93.8%) questionnaires were completed.

Figure 1. The online questionnaire

4. Data analysis

To provide appropriate responses for the research questions, the data collected via questionnaire were analyzed using multiple statistical processes. Initially, they were submitted to SPSS software (version 26) for descriptive statistics. In addition, Pearson Correlation was run between the variables (i.e. MT familiarity, MT use, fear of detection, and the importance of training among language learners) to examine whether any significant relationship existed among them.

5. Results

The first research question intended to explore Iranian EFL student teachers' perceptions towards the use of MT for language learning in academic context. As presented in Table 2, the mean scores for the first three items of the MT familiarity subscale of the questionnaire were 3.64, 4.42, and 3.61 respectively. Moreover, the participants did know the use of digital devices such as smart phones and computers with average means of 3.92, and 4.53.

Fortunately, the mean scores 3.39, 2.64, 4.68 showed that most of the participants were acquainted with MT, and different types of this system including Google Translate (GT). Satisfied with MT output (M = 2.64; SD = .903), they installed MT apps on their smartphones. Although the respondents used MT on their own digital devices such as tablets to complete assignments or translations from Persian to English and vice versa, they were neutral about whether their instructors confirmed their MT use, or whether they preferred their teachers' awareness of using MT or not. They were also slightly unfavorable about the idea that consulting MT was against the regulations (Item [20]: M = 2.28; SD = 1.337).

Concerning the last subscale of the questionnaire dealing with the importance of MT training, items [21] to [24] congruently informed the importance of training for both instructors and learners through workshops held by their university for effective MT use. Besides, the fact that MT training led to a better learning in general (M = 3.36; SD = 1.193) and an improved language learning in particular (M = 3.41; SD = 1.173), did not necessarily mean that not receiving training prevented proper MT use and making unfair judgements about the power of MT (Item [28]: M = 2.36; SD = 1.136 & item [29]: M = 2.04; SD = .961).

Table 2. Descriptive statistics for EFL learners' perceptions questionnaire

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
I am familiar with digital technology.	107	1	5	3.64	.105	1.084
I am familiar with the Internet.	107	2	5	4.42	.073	.753
I am familiar with an operating system.	107	1	5	3.61	.117	1.211
I know how to use digital devices.	107	1	5	3.92	.103	1.065
I know how to use my phone or computer.	107	2	5	4.53	.065	.677

I know what machine translation means.	107	1	5	3.39	.128	1.323
I know different types of machine translation systems.	107	1	5	2.64	.111	1.151
I know Google Translate.	107	2	5	4.68	.062	.638
I am happy with machine translation output.	107	1	5	2.64	.087	.903
I have a machine translation app on my phone.	107	1	5	3.14	.157	1.622
I use machine translation a lot.	107	1	5	2.92	.119	1.230
I use machine translation to translate from English to my mother tongue.	107	1	5	2.76	.129	1.331
I use translation to translate from my mother tongue to English.	107	1	5	2.76	.123	1.273
I use MT on my device such as phone, tablet, etc.	107	1	5	3.35	.137	1.415
I use MT a lot to do my homework.	107	1	5	2.61	.129	1.337
My teacher told me not to use MT.	107	1	5	2.79	.140	1.452
My teacher dislikes my using MT.	107	1	5	2.96	.127	1.310
I do not want the teacher to know I have used MT.	107	1	5	2.40	.128	1.324
I do things so that my teacher does not realize I have used MT.	107	1	5	2.06	.119	1.235
MT use is against our institute's regulations.	107	1	5	2.28	.129	1.337
I should be trained to use machine translation effectively.	107	1	5	2.89	.138	1.430
My teacher should teach me how to use machine translation.	107	1	5	3.10	.147	1.517
My university/institute should conduct workshops on how to use MT.	107	1	5	3.15	.131	1.358
Teachers should also be taught how to use machine translation.	107	1	5	3.36	.126	1.305
Machine translation improves learning in general if I receive training.	107	1	5	3.36	.115	1.193

Machine translation improves language learning if I receive training.	107	1	5	3.41	.113	1.173
Since I was not trained, I could not use MT correctly.	107	1	5	2.15	.113	1.164
I underestimated the power of MT because I had no training.	107	1	5	2.36	.110	1.136
I overestimated the power of MT because I had no training.	107	1	5	2.04	.093	.961
Valid N (list wise)	107					

To address the second research question, Pearson Correlation tests were run between MT familiarity, MT use, fear of detection, and the importance of training among language learners.

Table 3. Results of Spearman test for finding the relationship between MT familiarity and MT use

			MT familiarity	MT use
Spearman's rho	MT familiarity	Correlation Coefficient	1	0.088
		Sig. (2-tailed)		0.366
		N	107	107
	MT use	Correlation Coefficient	0.088	1
		Sig. (2-tailed)	0.366	
		N	107	107

As shown in table 3 above, a very low correlation between MT familiarity and MT use means that language learners were conversant with high tech, especially MT; and use it for language learning (r = .088, p = .366).

Table 4. Results of Spearman test for finding the relationship between MT familiarity and fear of detection

			MT familiarity	Fear Of Detection
Spearman's rho	MT familiarity	Correlation Coefficient	1	0.047
		Sig. (2-tailed)		0.631
		N	107	107
	Fear Of Detection	Correlation Coefficient	0.047	1
		Sig. (2-tailed)	0.631	
		N	107	107

Table 4 also displayed a minute relationship between MT familiarity and fear of detection (r = .047, p = .631). This very low correlation value implied that acquaintance with MT and using it did not violate institutional laws or language instructors' subjective viewpoints.

Table 5. Results of Spearman test for finding the relationship between MT familiarity and the importance of training

			MT familiarity	The Importance Of Training
Spearman's rho	MT familiarity	Correlation Coefficient	1	-0.183
		Sig. (2-tailed)		0.059
		N	107	107
	The Importance Of Training	Correlation Coefficient	-0.183	1
		Sig. (2-tailed)	0.059	
		N	107	107

A negative correlation was reported between MT familiarity and the importance of training (r = -.183, p = .059) implying that despite learners' familiarity with MT, they agreed with receiving training about MT use for more improved language learning. However, absence of MT training did not impede proper use of MT or foster biased appraisals of the power of MT.

Table 6. Results of Spearman test for finding the relationship between MT use and fear of detection

			MTuse	Fear Of Detection
Spearman's rho	MT use	Correlation Coefficient	1	.441**
		Sig. (2-tailed)		0.000
		N	107	107
	Fear Of Detection	Correlation Coefficient	.441**	1
		Sig. (2-tailed)	0.000	
		N	107	107
**. Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation analysis revealed a significant correlation between MT use and fear of detection (r = .441, p = .000) implying that the more the participants incorporated MT in the process of language learning, the more they became skeptical of acting against the institutional laws or their instructors' opinions of MT use.

Table 7. Results of Spearman test for finding the relationship between MT use and the importance of training

			MTuse	The Importance Of Training
Spearman's rho	MT use	Correlation Coefficient	1	.281**
		Sig. (2-tailed)		0.003
		N	107	107
	The Importance Of Training	Correlation Coefficient	.281**	1
		Sig. (2-tailed)	0.003	
		N	107	107
**. Correlation is significant at the 0.01 level (2-tailed).

There was also another significant correlation between MT use and the importance of training (r = .281, p = .003). This significant correlation indicated that the more they used MT for educational purposes, they were more likely to receive MT training to improve their linguistic skills. In addition, making language instructors cognizant of the pros and cons of MT was of crucial importance. These demands can be addressed by the university through conducting MT workshops for both students and instructors.

Table 8. Results of Spearman test for finding the relationship between fear of detection and the importance of training

			Fear Of Detection	The Importance Of Training
Spearman's rho	Fear of Detection The Importance of Training	Correlation Coefficient	1	.307**
		Sig. (2-tailed)		0.001
		N	107	107
	The Importance of Training	Correlation Coefficient	.307**	1
		Sig. (2-tailed)	0.001	
		N	107	107

**. Correlation is significant at the 0.01 level (2-tailed).

Finally, fear of detection and importance of training were strongly related to each other. This significant correlation (r = .307, p = .001) confirmed the fact that as adequate training lead to a better language learning, good preparation turned MT use into an ethical practice on the part of language learners, instructors, and the university.

6. Discussion

At this point, the results of the study are explored and discussed in order to provide a better picture regarding the EFL student's perception of MT in relation to foreign language learning.

The first research question intended to explore Iranian EFL student teachers' perceptions towards the use of MT for language learning in an academic context. The data suggested that most participants were familiar with digital technology, the Internet, and operating systems. Moreover, the participants did know the use of digital devices such as smart phones and computers. It was also shown that most of participants were acquainted with what MT stood for, and different types of this system including Google Translate (GT). As they had been satisfied with MT output, the majority installed MT apps on their smartphones. Although the respondents used MT on their own digital devices such as tablets to complete assignments or translations from Persian to English and vice versa, they were neutral about whether their instructors confirmed their MT use, or whether they prefer their teachers to know they used MT. They were also slightly unfavorable about the idea that consulting MT was against the regulations.

To address this research question, a couple of Pearson Correlation tests were run between various variables all of which will be explained in detail. As for the relationship between familiarity and MT use, the data showed that there was a low correlation between MT familiarity and MT use meaning language learners were conversant with high tech, especially

MT and its use for language learning. This very low correlation value implied that acquaintance with MT and using it did not violate institutional laws or language instructors' subjective viewpoints.

A negative correlation was reported between MT familiarity and the importance of training implying that despite learners' familiarity with MT, they agreed with receiving training about MT use for more improved language learning. However, absence of MT training did not impede proper use of MT or a reason for having biased appraisals of the power of MT.

As for the relation between MT use and fear of detection, the data showed that the more the participants incorporated MT in the process of language learning, the more they became skeptical of acting against the institutional laws or their instructors' opinions of MT use.

There was also another significant correlation between MT use and the importance of training. This significant correlation indicated that the more they used MT for educational purposes, they were more likely to receive MT training to improve their linguistic skills. In addition, making language instructors cognizant of the pros and cons of MT was of crucial importance.

Fear of detection and importance of training were strongly related to each other. This significant correlation expressed the fact that as adequate training lead to better language learning, good preparation turned MT use into an ethical practice on the part of language learners, instructors, and the university.

Finally, concerning the last subscale of the questionnaire dealing with the importance of MT training, the data concurrently exhibited the importance of training for both instructors and learners through workshops held by their university for effective MT use. Besides, the fact that MT training led to a better learning in general and an improved language learning in particular did not necessarily mean that not receiving training prevented proper MT use or making unfair judgements about the power of MT.

This is the first study in which Iranian EFL student teachers' perceptions toward MT use in foreign language learning were explored. Wang and Ping (2020) examined perceptions of MT and Computer Aided Translation (CAT) among translation professionals and the general public by surveying 124 articles published in the professional journals in the Chinese media between 2017 and 2019. Through framing analysis, the following frames about MT and CAT are identified: progress, quality, threat, limitation, cooperation, economic factors, and ethics. Through qualitative analysis of prominent frames, it was also found that attitudes varied between the professional journals and the media about the role of MT as related to human translators.

In another similar study by Rossi (2019) devoted to the uses and perceptions of MT at the European Commission, she tried to understand current uses and perceptions of machine translation (MT) and post-editing within Europe's biggest translation institution. Based on ethnographic data, she established a survey that was tested among French translators before translating it into English and submitting it to all translators. Her findings showed that perceptions of control, subjective norm and image, as well as insecurity (fear of MT) had an impact on professional MT acceptance.

The use of MT in the field of migrations seems to be very limited and, in view of the latest developments, it is only natural to explore its usefulness in the migratory contexts. In an attempt to introduce this technology into this particular area, Marcias, Ramos and Rico (2020) reported a qualitative study on translators' perceptions towards MT and post-editing tasks. The findings of the study indicated that both were not widely developed within the migratory context and further work was required. Based on findings, this study can contribute to opening the way for MT and post-editing tasks to be included into the field of migrations.

Jolley and Maimone (2015) reported the results of a survey-based study on the use of attitudes, perceptions, and beliefs about Google Translate and similar free online machine translation (FOMT) tools by students and instructors in 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 FL teaching and learning. Taking those results into account, the authors proposed a preliminary framework to develop best practices to address FOMT tool use in FL learning contexts. Chief among their recommendations was that students in FL teaching methods, courses had to include training regarding their potential pedagogical applications.

7. Conclusion

MT has changed dramatically since 2017 and the output shows significant improvements compared with the previous outputs. This will definitely attract more users including foreign language learners to use it for their both academic and non-academic activities. Language learners will definitely use this technology whether instructors like it or not. Therefore, it is necessary for language teachers to be familiar with this technology and their students' perception of this technology. This study tried to show what language learners thought about this technology and how they used it. It is hoped that the findings of this study will inform language teachers and educators to have an updated view regarding this technology and try to use it most effectively in their language classes.

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