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Integrating Cloud-Based CAT Tools in EFL Translation Learning: A Systematic Literature Review

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ABSTRACT

The impact of cloud-based Computer-Assisted Translation (CAT) technologies on translation learning in English as a Foreign Language (EFL) contexts had been growing, not just in terms of technical support but also in terms of wider educational consequences. Yet, the evidence remained fragmented as prior studies tended to investigate student outcomes, instructional approaches, and pedagogical contributions in isolation. This systematic literature review intended to synthesise the educational significance of cloud-based CAT technologies for EFL translation learning by assessing their influence on students' learning results, instructional practices, and pedagogical transformation. The study was a Systematic Literature Review (SLR) conducted according to the PRISMA 2020 guidelines. Searches were carried out in Scopus, Google Scholar, ERIC, and Crossref for English-language academic publications released between 2020 and 2025. Twenty-five studies were considered for final synthesis after the screening and eligibility processes. Data were analysed thematically and descriptively. Three themes emerged: student learning outcomes, instructional practices, and pedagogical contributions. The results indicated that the integration of cloud-based CAT was associated with improvements in learners' digital competence, confidence, motivation, technology acceptance, and collaborative engagement, while several studies also suggested increased independence in learning. CAT-supported environments also influenced curriculum adaptation, teacher responsibilities, and assessment procedures, and encouraged learner-centred approaches and authentic learning. However, there were issues of institutional readiness, infrastructure and teacher preparedness despite these benefits. The review indicated that cloud-based CAT technologies could serve as educational mediators in EFL translation education to support learner development, instructional practices, and pedagogical transformation.

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I. INTRODUCTION

With the rapid development of digital technology, the teaching and learning mode in various fields has been changing significantly, such as language teaching and translation teaching. Compared with the traditional language and translation pedagogy, digital technology has brought profound changes in language and translation teaching mode. In higher education, the portfolios of digital environments are changing expectations on competences that should be acquired not only just in language studies. In addition to digital

literacy, students are also expected to have collaboration and adaptability skills, and problem-solving skills to be able to participate in academic environments and workplaces mediated by technologies (Escudeiro et al., 2022; Li et al., 2024). Competence oriented learning has been promoted by these developments as reflected in a focus on authentic tasks, interaction and also involving digital engagement in learning, including in the study of translation.

Translation learning has been a pedagogical area gradually moving away from teacher-centered learning to more engaged and technology-rich ones, in an English as a Foreign Language (EFL) context. The learning activity of translation is not only considered as the transfer of knowledge between languages, but is increasingly seen as an activity that uses digital resources, interacts with revision practices, with authentic problem solving. However, there is the old teaching approach of using individual assignments, product-oriented assessment, and sparse application of translation technologies in EFL classrooms. This can limit students' chances of learning the acquisition of autonomy, cooperation ability and technological awareness needed in today's educational and work contexts (Tian et al., 2023; Tsai, 2020; W. Zhao, 2020).

One answer to such difficulties has been the growing prevalence of computer-assisted translation (CAT) technologies in the curricula of translation education. CAT technologies have been created initially to enhance efficiency and uniformity among professional translators and have turned into a part of the educational and technology-enabled learning environments. Their integration is part of digital pedagogy general trends that call for the participation of students and genuine interaction with a professional task. Among these, cloud-based CAT platforms have been noted for their ability to enable collective collaboration, access to translation aids in the cloud and collaborative learning spaces that are closer to experiencing collaborative translation processes in 'real-life'(Do Carmo & Moorkens, 2020; Granell & Chaume, 2023; Hou & Zhang, 2022). (He, 2021) indicated that classroom assignments based on CAT generated learning may be associated with student autonomy, translation competence, classroom interaction, and pedagogical innovation based on previous research. Others have also reported that CAT-supported learning could be a contributing tool to student autonomy, translation competence, classroom interaction, and pedagogical innovation (Guerberof-Arenas et al., 2024).

There is an increasing interest in CAT-supported learning, however, there are conflicting results on the educational impact of CAT. Several studies have suggested that the integration of CAT into the curriculum is associated with students' engagement, collaborative learning, technological ability, and learning authenticity (Pramawati et al., 2024; J. Zhao, Li, Wei, et al., 2025). However, other studies have pointed to the constraints of technological infrastructure, unequal access to digital resources, teacher training in readiness and implementation, and implementation difficulties (He, 2021; Sir Al Khatim, 2022; W. Zhao, 2020). Other research suggests that instructional design and institutional support are especially important for the effectiveness of the integration of CAT (Shaban, Ahmad Abdulkarem & Ameen, Mulik H. Mohammed, 2023). The mixed results indicate that besides technology access, there are situational and instructional constraints that affect educational outcomes.

Further, there is limited research that addresses CATs integration at the holistic level and also addresses CATs integration within a specific dimension. Others concentrate on what students feel and think about the technology or on how many students were willing to use the technology, explore how the technology was put into practice in the classroom, the languages the teachers used, or the pedagogical significance of the technology alone (Chan, 2025; Remkhe & Nefedova, 2020). As a result, the linkages among student learning outcomes, instructional transformation, and the broader pedagogical development are underdeveloped. The current existing evidence is therefore scattered in the field of education from diverse purposes and contexts, and hinders a more coherent understanding of the effects of cloud-based CAT technologies on EFL translation learning.

This condition brings another important research gap to light: lack of integrated systematic evidence on the interwoven impacts of cloud–based CAT technologies on learner development and instruction and on overall pedagogical changes in EFL translation learning. Although there are some previous studies that have provided some good results, those dimensions are usually discussed separately. Consequently, there exists a fairly unrealized body of other relationships between competence development, pedagogic change in instruction and pedagogy with increased effect of technology. This study, therefore, contributes in a novel way by integrating all these dimensions all of which are interrelated into one.

Hence, the purpose of this systematic literature review is to give a thorough account of how the EFL translation learning educational values of CAT technologies that employ cloud technologies are presented in the literature. The review aims to establish a set of patterns, contradictory points and pedagogical implications by linking findings drawn from previous research. Results will be presented as evidence-based information to educators, curriculum developers, institutions and future researchers. Thus, the aims of this study were to investigate the following research questions:

(1) What factors impact on the achievement of students in the area of EFL translation learning through using CAT technologies in the virtual environment?

(2) How does integration of cloud-based CAT technologies influence the teaching practices and the pedagogical changes regarding instruction?

(3) How do cloud-based CAT tools play a role in wider pedagogical advances in technology enhanced translation learning environments?

II. METHODS

TThis study used a systematic literature review (SLR) to bring together published work on cloud-based CAT technologies in EFL translation learning. Conceptual and review-based studies were included because they provided theoretical explanations and pedagogical interpretations related to CAT integration. An SLR was chosen because it provides a structured way to compare findings, identify recurring patterns, and examine contradictions and research gaps across different educational settings (Xiao, 2021). The analysis focused on three related areas: (1) student learning outcomes, (2) teaching practices and instructional change, and (3) broader contributions to EFL pedagogy. The review process followed the PRISMA 2020 guidelines to make the study selection and reporting procedures more transparent (Page et al., 2021).

The literature search covered Scopus, Google Scholar, ERIC, and Crossref, as these sources provide broad access to publications in translation education, educational technology, and applied linguistics. Publications released between 2020 and 2025 were considered to capture recent developments in cloud-based CAT, AI-assisted translation, and digital learning. This period was selected because translation technologies and their use in higher education have changed rapidly in recent years.

Search terms were developed from the main concepts addressed in the review: CAT and translation technologies, EFL or translation education, and educational outcomes. Boolean operators, quotation marks, and alternative terms were adjusted to the search functions available in each source. Depending on the source, searches covered titles, abstracts, keywords, or general publication records. The final searches were completed in 2026. Table 1 presents the search strings and limits used in each source.

Table 1. Search Sources, Search Strings, and Limits

Source	Search string	Limits
Scopus	TITLE-ABS-KEY (("computer-assisted translation" OR "CAT tool*" OR "cloud-based CAT" OR "translation technolog*" OR "machine translation" OR "AI-assisted translation") AND ("EFL" OR "English as a foreign language" OR "translation education" OR "translation learning" OR "translation pedagogy") AND (student* OR learner* OR teach* OR pedagog* OR competence OR autonomy))	English; 2020–2025
Google Scholar	"cloud-based CAT tools" "translation learning"; "computer-assisted translation" EFL pedagogy; "translation technology" "learner autonomy"; "CAT tools" "translation competence"	English; 2020–2025
ERIC	("computer-assisted translation" OR "CAT tools" OR "translation technology" OR "machine translation") AND ("English as a foreign language" OR "translation education" OR "translation learning") AND (student* OR learner* OR teaching OR pedagogy OR competence)	English; 2020–2025
Crossref	("CAT tools" OR "computer-assisted translation" OR "translation technology") AND ("EFL learning" OR "translation education" OR "translation pedagogy")	English; 2020–2025

Studies were considered when they were published between 2020 and 2025, written in English, and dealt with CAT or related translation technologies in EFL or translation education. The review covered journal articles, conference papers, and scholarly book chapters. Empirical studies, conceptual papers, and review-based publications were included when they addressed student learning, teaching practice, or broader pedagogical issues. Theses, editorials, non-academic publications, studies outside educational settings, and papers concerned only with software development were excluded. During the synthesis, empirical studies were used mainly to describe reported learning and teaching outcomes, while conceptual and review-based publications were used to discuss wider pedagogical developments. The inclusion and exclusion criteria are presented in Table 2.

Table 2. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Publication year	2020–2025	Published before 2020
Language	English	Languages other than English

Document type	Journal articles, conference papers, and scholarly book chapters	Theses, editorials, and non-academic publications
Topic	CAT or related translation technologies in EFL or translation education	Studies unrelated to translation learning or educational settings
Research focus	Empirical, conceptual, or review-based work on student learning, teaching practice, or pedagogy	Technical studies with no clear educational focus

Study selection followed the identification, screening, eligibility, and inclusion stages of PRISMA 2020. The searches produced 1,200 records: 350 from Scopus, 500 from Google Scholar, 150 from ERIC, and 200 from Crossref. After 300 duplicate records were removed, 900 records remained for title and abstract screening. At this stage, 780 records were excluded because they did not meet the topic, context, or educational focus of the review.

The remaining 120 publications were assessed in full text. Of these, 95 were excluded because they lacked a clear educational focus, dealt mainly with technical software development, fell outside EFL or translation education contexts, or did not meet the eligible publication-type criteria. The remaining 25 studies met the inclusion criteria and were retained for the final synthesis. The complete study selection process is presented in Figure 1.

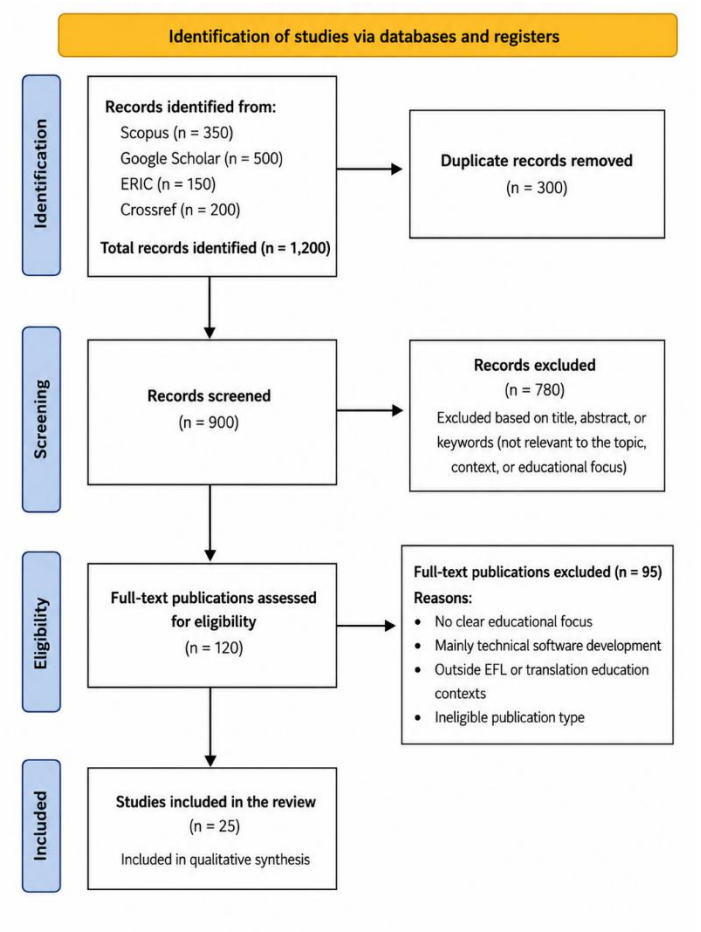

Figure 1. PRISMA 2020 Flow Diagram of the Study Selection Process

The methodological quality of the included publications was assessed from the full texts using five design-sensitive criteria: clarity of objectives, suitability of the study design, adequacy

of sampling or source selection, transparency of data collection and analysis, and consistency between the findings and conclusions. Each criterion was rated as met, partly met, or not met. Publications meeting four or five criteria were classified as high quality, those meeting two or three criteria as moderate quality, and those meeting fewer than two criteria as low quality. The appraisal was used to identify methodological limitations and to guide interpretation rather than to exclude studies solely on the basis of quality. The results are summarised in Table 3.

Table 3. Methodological Appraisal of the Included Studies

No.	Study	Study design	Appraisal summary	Main methodological limitation	Overall judgement
1	Tian et al. (2023)	Quantitative	Clear objectives, participant information, and statistical analysis	Cross-sectional and self-reported data limit causal interpretation	Moderate
2	Li et al. (2024)	Quantitative	Large sample and clearly reported analytical model	Technology acceptance was measured mainly through self-reported responses	Moderate
3	Zhao, Li, Wei, et al. (2025)	Quantitative	Large sample and clearly defined variables	Findings were drawn from a specific population of EFL students	Moderate
4	Alfaisal (2025)	Quantitative	Relevant focus on CAT-related self-efficacy	Sampling and instrument validation were not fully detailed in the full text	Moderate
5	Yudianto et al. (2025)	Qualitative	Student perspectives and concerns were directly explored	Findings were context-specific and based on reported perceptions	Moderate
6	Sir Al Khatim (2022)	Qualitative	Clear focus on students' attitudes toward CAT and machine translation	Limited transferability beyond the institutional setting	Moderate
7	Zhao, Li, and Gao (2025)	Quantitative	Large participant group and clearly specified technology-related constructs	Reliance on self-reported behavioural intention and technology use	Moderate
8	Tsai (2020)	Mixed methods	Combined evidence on translation quality and collaboration	Context-specific implementation and limited evidence of long-term effects	Moderate
9	Zappatore (2024)	Case study	Detailed description of active and	Findings came from a single course and	Moderate

			collaborative course design	may not generalise widely	
10	Chan (2025)	Qualitative	Student responses to blended technology training were clearly reported	The study focused mainly on perceptions and satisfaction	Moderate
11	Zhao (2020)	Conceptual/ review-based	Offers a clear discussion of curriculum integration	Limited primary empirical evidence	Low
12	Xiao (2021)	Experimental/comparative	Examined collaborative CAT use in an instructional setting	Conference-paper format may provide limited methodological detail	Moderate
13	He (2021)	Conceptual/ review-based	Identifies relevant challenges and educational responses	Arguments were mainly conceptual and not supported by direct classroom data	Low
14	Khasawneh and Shawaqfeh (2024)	Mixed methods	Included lecturers' perspectives on digital-tool integration	Results were based on a particular institutional and professional context	Moderate
15	Pramawati et al. (2024)	Development/design research	Presented a CAT-based learning model and reported learning outcomes	Evidence may be closely tied to the developed model and implementation setting	Moderate
16	Rodriguez De Céspedes (2020)	Qualitative/ action research	Provided practice-based evidence from translation training	Action-research context may introduce researcher involvement and limited generalisability	Moderate
17	Hou and Zhang (2022)	Experimental/comparative	Reported measurable translation-system outcomes	Strong technical orientation and limited direct evidence of broader pedagogical effects	Moderate
18	Do Carmo and Moorkens (2020)	Conceptual/ book chapter	Provides a clear conceptual distinction among editing, revision, and post-editing	Not an empirical study of EFL learners	Low
19	Guerberof-Arenas et al. (2024)	Experimental/comparative	Used direct comparison to examine post-editing and creativity	Very small sample of 11 postgraduate students	Moderate

20	Shkarban (2025)	Experimental/comparative	Compared human and AI-supported translation performance	Small and context-specific sample limits wider generalisation	Moderate
21	Zhang et al. (2024)	Case study	Described the integration of translation memory and CAT tools	Limited participant and educational-context information in the reported study	Low
22	Shaban and Ameen (2023)	Conceptual/review-based	Discussed CAT-related productivity and translation strategies	Limited methodological detail and weak empirical grounding	Low
23	Remkhe and Nefedova (2020)	Conceptual/review-based	Described a web-based translation platform and its educational potential	Conference-based publication with limited direct outcome evidence	Low
24	Granell and Chaume (2023)	Conceptual/review-based	Provides a broad account of human–machine convergence in translation	Focus extends beyond EFL classroom learning and contains no direct learner data	Low
25	Escudeiro et al. (2022)	Development/design research	Presented a concrete educational application with an accessibility focus	Proof-of-concept design limits generalisation beyond the project setting	Moderate

Overall, most empirical studies were rated as moderate in methodological quality. Their objectives and analytical procedures were generally clear, but several relied on self-reported data, small or context-specific samples, or short-term observations. Conceptual and review-based publications were useful for interpreting wider pedagogical developments, although they offered weaker support for claims about direct learning outcomes. These differences were taken into account during synthesis and discussion.

Data were extracted on publishing characteristics, participants, educational settings, CAT technology, methodological approaches, key findings and educational implications. Further details such as countries, educational settings and obstacles identified were also recorded to permit comparability between research. The synthesis matrices of retrieved information made it possible to identify commonalities, recurring patterns, conflicts and developing educational trends across contexts.

The extracted data were examined through thematic synthesis and descriptive content analysis. Related findings were coded and grouped into broader conceptual themes. Differences in research design, participant characteristics, and educational aims made thematic synthesis appropriate. Organising the evidence into wider themes also clarified links between learner development, teaching approaches, and pedagogical consequences.

The synthesis of the 25 included studies produced three main themes: (1) student learning outcomes, represented by seven studies; (2) teaching practices and instructional change, represented by nine studies; and (3) broader contributions to EFL pedagogy, represented by nine

studies. These themes were then used as the basis of analysis in the Results and Discussion section.

III. RESULT AND DISCUSSION

Overview of Findings

This systematic literature review synthesised findings from 25 studies on cloud-based CAT use in EFL translation learning. The findings were organised into three related themes: student learning outcomes, teaching practices and instructional change, and broader contributions to EFL pedagogy. Across the reviewed literature, CAT technology was rarely treated as a purely technical resource. Instead, most studies discussed CAT-supported environments as learning spaces connected with competence development, technology use, instructional change, and pedagogical innovation.

Table 4. Distribution of Themes Across Included Studies

Theme	Number of studies	Main findings
Student learning outcomes	7	technology acceptance, autonomy, confidence, digital competence
Teaching practices	9	curriculum change, teacher role, assessment, implementation
Pedagogical contribution	9	learner-centred learning, AI integration, authentic learning

The distribution of themes shows that the literature extends beyond translation accuracy and technical performance. Many studies also examined student development, changes in classroom practice, and the wider role of digital pedagogy. Taken together, the evidence suggests that CAT-supported environments are increasingly being discussed as instructional resources rather than simply as tools for producing translations.

Publication Trends of Included Studies

Publication trends were examined to identify patterns in research growth, methodological approaches, geographical contexts, and educational technologies discussed across included studies.

Table 5. Publication Trends Across 25 Included Studies

Publication year	Number of studies	Percentage
2020	5	20%
2021	2	8%
2022	3	12%
2023	3	12%
2024	6	24%
2025	6	24%
Total	**25**	**100%**

Publication activity was highest in 2024 and 2025, with six studies in each year (24%). Five studies were published in 2020 (20%), while 2022 and 2023 each contributed three studies

(12%). Only two studies were published in 2021 (8%). Overall, 12 of the 25 studies (48%) were published during 2024–2025, showing that nearly half of the included literature appeared in the final two years of the review period.

Table 6. Methodological Approaches in the Included Studies

Method category	Frequency	Percentage	Example studies
Quantitative	5	20%	Tian et al. (2023); Li et al. (2024); Zhao et al. (2025); Alfaisal (2025); Zhao et al. (2025b)
Qualitative	4	16%	Yudianto et al. (2025); Sir Al Khatim (2022); Chan (2025); Céspedes (2020)
Mixed Methods	2	8%	Tsai (2020); Khasawneh & Shawaqfeh (2024)
Conceptual / Review	6	24%	Zhao (2020); He (2021); Carmo & Moorkens (2020); Remkhe & Nefedova (2020); Granell & Chaume (2023); Shaban & Ameen (2023)
Experimental / Comparative	4	16%	Xiao (2021); Hou & Zhang (2022); Guerberof-Arenas (2024); Shkarban (2025)
Case Study	2	8%	Zappatore (2024); Zhang et al. (2024)
Development / Design Research	2	8%	Pramawati et al. (2024); Escudeiro et al. (2022)
Total	**25**	**100%**	

The 25 included studies showed considerable methodological variation. Conceptual and review-based publications were the largest category (n = 6), followed by quantitative studies (n = 5), qualitative studies (n = 4), and experimental or comparative studies (n = 4). Mixed-methods studies, case studies, and development-oriented research each accounted for two publications. This distribution shows that research on cloud-based CAT integration is not limited to empirical measurement, but also includes conceptual discussion, pedagogical reflection, and technology design. More recent work also appears to combine experimental approaches with educational concerns, particularly in relation to student outcomes and instructional change.

Table 7. Geographical Distribution of the Included Studies

Geographical context	Number of studies	Percentage
China	10	40%
Europe	7	28%
Middle East	3	12%
Indonesia	2	8%
Taiwan	1	4%
Hong Kong	1	4%

Sudan	1	4%
Total	**25**	**100%**

The geographical distribution was uneven. China accounted for 10 studies (40%), followed by European settings with seven studies (28%). Three studies (12%) were conducted in Middle Eastern contexts, while Indonesia contributed two studies (8%). Taiwan, Hong Kong, and Sudan were each represented by one study (4%). This concentration indicates that the evidence is shaped mainly by Chinese and European settings, while other regions remain underrepresented.

CAT platforms and related translation technologies were discussed in 12 studies (48%), making them the most frequently represented category. Machine translation and post-editing appeared in eight studies (32%), while AI-assisted translation was examined in five studies (20%). Collaborative or web-based platforms were also reported in five studies (20%), and translation memory or translation management systems appeared in three studies (12%). Because several publications examined more than one type of technology, these categories overlap. The distribution shows that conventional CAT and machine-translation tools remain central to the literature, while AI-assisted environments have become more visible in recent publications.

Table 8. Translation Technologies Discussed in the Included Studies

Technology category	Number of studies	Percentage of 25 studies
CAT platforms or translation technology	12	48%
Machine translation or post-editing	8	32%
AI-assisted translation	5	20%
Collaborative or web-based translation platforms	5	20%
Translation memory or translation management systems	3	12%
Other specialised translation systems	2	8%

Note. A study could address more than one technology category; therefore, the percentages do not total 100%.

Table 9. Master Synthesis Matrix of the 25 Included Studies

No.	Author	Year	Country	Participants	CAT Tool / Technology	Key Findings	Theme
1.	Tian et al.	2023	China	108 MTI students	TT, CAT, MT	Growth mindset predicts technology acceptance	T1: Student learning outcomes
2.	Li et al.	2024	China	370 students	Translation technologies	Enjoyment and ease of use predict adoption	T1
3.	J. Zhao, Li, Wei, et al.,	2025	China	663 EFL seniors	Translation Technology	Emotional intelligence	T1

					Competence	improves TTC	
4.	Alfaisal	2025	Saudi Arabia	University students	CAT	Uneven technology competence	T1
5.	Yudianto et al.	2025	Indonesia	EFL students	Automatic Translation Tools (ATTs)	Positive perception but dependency concerns	T1
6.	Sir Al Khatim	2022	Sudan	Students	CAT, MT	Positive attitudes toward translation technologies	T1
7.	J. Zhao, Li, & Gao, 2025	2025	China	EFL students	Translation technology	Optimism increases technology use	T1
8.	Tsai	2020	Taiwan	Students	Termsoup, CAT	Improves translation quality and collaboration	T2: Teaching practice
9.	Zappatore	2024	Italy	MA students	CAT, TMS	Role-play increases engagement	T2
10.	Chan	2025	Hong Kong	67 students	MOOC supported translation technology training	Positive responses toward workshops	T2
11.	W. Zhao	2020	China	College learners	CAT	Need for curriculum integration	T2
12.	Xiao	2021	China	Students	Collaborative CAT	Improves collaborative learning	T2
13.	He	2021	China	Educational context	AI, MT	Need for AI integration in education	T2

14.	Khasawneh & Shawaqfeh	2024	Jordan	Lecturers	Digital tools	AI accepted cautiously	T2
15.	Pramawati et al.	2024	Indonesia	Students	RATPro	Learning outcomes improved	T2
16.	Céspedes	2020	Spain/UK	Translation trainees	CAT tools	Need balance between technology and linguistics	T2
17.	Hou & Zhang	2022	China	Learners	Interactive MT	Translation accuracy improved	T3: Pedagogical contribution
18.	Do Carmo & Moorkens	2020	Ireland	Professionals	MTPE	Post-editing considered translation practice	T3
19.	Guerberof-Arenas	2024	Netherlands	11 MA students	MT, PE	Limited pedagogical changes observed	T3
20.	Shkarban	2025	Ukraine	46 students	AI, MT, HT	Human translators outperform AI in nuance	T3
21.	Zhang et al.	2024	China	Workflow context	TM, CAT	Translation quality improved	T3
22.	Shaban & Ameen	2023	Iraq	Students	CAT	Productivity increases	T3
23.	Remkhe & Nefedova	2020	Russia	Educational context	Translation platforms	Efficiency and flexibility improved	T3
24.	Granell & Chaume	2023	Spain	AVT context	AVT technology	Human-machine convergence in translation	T3
25.	Escudeiro et al.	2022	Portugal	MOOC learners	Auto translation	Improves accessibility and	T3

	digital learning

Theme 1. Effects of Cloud-Based CAT Tools on Student Learning Outcomes (7 Studies)

Of the 25 studies analysed, seven focused on student learning outcomes. Recurring findings included technology acceptance, learner confidence, translation competence, digital competence, and generally positive attitudes toward translation technologies.

Five studies reported positive attitudes toward CAT adoption and greater confidence in using translation technology (Li et al., 2024; Sir Al Khatim, 2022; Tian et al., 2023; J. Zhao, Li, & Gao, 2025). Growth mindset, enjoyment, and optimism were frequently associated with students' willingness to use translation technology. These findings suggest that affective and psychological factors shape learners' engagement in CAT-supported settings.

Another recurring theme was the relationship between learner confidence and technology acceptance. Enjoyment, optimism, and a growth mindset were often linked to readiness to engage with translation technology (Li et al., 2024; J. Zhao, Li, & Gao, 2025). This suggests that successful CAT integration depends not only on technical skill but also on learners' emotional readiness for digital learning.

Digital competence was also examined in several studies. (J. Zhao, Li, Wei, et al., 2025) reported an association between emotional intelligence and translation technology competence, pointing to a link between affective preparedness and technological literacy. (Alfaisal, 2025) similarly discussed confidence and self-efficacy in relation to technology use.

Motivation and engagement showed a similar pattern. Indonesian EFL learners generally expressed positive views of AI-assisted translation, although concerns about excessive dependence on technology were also reported (Yudianto et al., 2025). This tension suggests that stronger technology acceptance may coexist with weaker independent problem-solving when tools are used without sufficient guidance.

These findings also show that digital competence is closely connected with broader abilities such as adaptability, self-regulated learning, and technology literacy. The contribution of CAT-supported learning may therefore extend beyond translation performance to include confidence, technology acceptance, and positive attitudes toward digital learning. However, the reviewed evidence also suggests that these benefits depend on meaningful engagement with the technology rather than on access or use alone.

Theme 2. Implications for Teaching Practices (9 Studies)

Nine studies reported instructional implications of CAT integration. Common issues included curriculum adaptation, changes in teacher roles, assessment practices, teacher preparation, and implementation barriers.

Around seven studies discussed curriculum changes involving authentic translation assignments, collaborative projects, and technology-supported activities (Pramawati et al., 2024; Tsai, 2020; Xiao, 2021; W. Zhao, 2020). These studies generally supported a shift from product-oriented instruction toward activities that more closely reflect professional translation practice.

Changes in teacher roles were also widely discussed. (Chan, 2025), (Tsai, 2020) and (Zappatore, 2024) described a move from teacher-centred instruction toward facilitation, mentorship, and collaborative guidance. Workshops, role-play activities, and collaborative revision tasks were commonly associated with stronger engagement and more reflective learning. Assessment practices also shifted in several CAT-supported settings, where peer feedback, collaborative evaluation, and formative assessment placed greater attention on the learning and revision process rather than only on the final translation product.

Evidence on implementation readiness was mixed. Five studies highlighted poor infrastructure, limited teacher competence, and uncertainty about integrating AI-supported tools into educational settings (He, 2021; Khasawneh & Shawaqfeh, 2024; W. Zhao, 2020). Other publications stressed the need to balance technological efficiency with linguistic judgement and critical awareness. (Rodriguez De Céspedes, 2020) for example, cautioned against allowing technology to displace human judgement and linguistic sensitivity. Overall, the evidence suggests that successful CAT integration depends more on pedagogical adaptation, teacher readiness, and institutional support than on the simple availability of technology.

Taken together, the reviewed studies present cloud-based CAT environments as resources that can support instructional change, although successful adoption remains contingent on curriculum design, teacher readiness, and institutional support.

Theme 3. Contributions to EFL Pedagogy (9 Studies)

Nine studies discussed broader pedagogical contributions from CAT-assisted translation learning. Common themes included learner-centred pedagogy, authentic learning, Technology-Enhanced Language Learning (TELL), accessibility, and the relationship between human and machine translation.

Authentic learning environments were among the most frequent themes. Several studies described CAT-supported activities as closer to professional translation practice, giving students experience with realistic workflows and workplace expectations (Do Carmo & Moorkens, 2020; Granell & Chaume, 2023; Zhang et al., 2024). Such environments may support practical competence beyond isolated language exercises. (Hou & Zhang, 2022) also reported higher translation accuracy in an interactive machine-translation setting, suggesting that technology-mediated practice can support practical learning when it is carefully designed.

Learner-centred pedagogy also appeared repeatedly. Collaborative and technology-supported activities were associated with greater involvement, autonomy, and reflective learning (Remkhe & Nefedova, 2020) Studies on accessibility and flexible learning similarly described translation technologies as useful for widening participation and supporting varied learning conditions (Escudeiro et al., 2022).

TELL also appeared as a recurring concern. Four studies highlighted the importance of language competence, AI literacy, and digital skills in current learning environments (Escudeiro et al., 2022; Shaban, Ahmad Abdulkarem & Ameen, Mulik H. Mohammed, 2023; Zhang et al., 2024). This suggests that translation education is no longer concerned only with linguistic ability, but increasingly with the capacity to work critically and effectively with digital technologies.

Contradictory evidence was also present. (Guerberof-Arenas et al., 2024)found limited pedagogical change following technology integration, while (Shkarban, 2025)reported that human translators continued to perform better than AI systems in nuanced interpretation and contextual understanding. Taken together, these findings suggest that translation technologies are more likely to complement human expertise than to replace it.

Several studies reported gains in productivity and efficiency (Remkhe & Nefedova, 2020), suggesting that pedagogical benefits may also extend to accessibility and flexibility. However, these advantages depend on how meaningfully the tools are integrated into instructional practice.

Collectively, the reviewed literature presents CAT-supported environments as part of a broader move toward learner-centred, authentic, accessible, and technology-supported translation learning.

Cross-Theme Synthesis Discussion

The cross-theme synthesis showed clear links between learner outcomes, teaching practices, and pedagogical change. Improvements in digital competence and technology acceptance were often discussed alongside curriculum adaptation and learner-centred teaching.

Across the three themes, translation competence was increasingly connected with digital competence, suggesting that successful translation learning now depends not only on linguistic knowledge but also on technical literacy, adaptability, and collaborative engagement.

Important contradictions remained. Positive learner views of CAT technologies did not always translate into effective implementation because institutional preparation, infrastructure, and teacher competence often limited adoption (He, 2021; W. Zhao, 2020). Interest in AI-supported tools also coexisted with concerns about dependency and reduced critical engagement (Yudianto et al., 2025).

Studies reporting stronger confidence and digital competence often also described curriculum adaptation and learner-centred teaching (Remkhe & Nefedova, 2020; Tian et al., 2023; Tsai, 2020). By contrast, studies reporting implementation difficulties usually emphasised limited institutional preparation and instructional support (He, 2021; W. Zhao, 2020).

Unlike earlier work that often examined single outcomes, this review brings learner development, instructional transformation, and pedagogical change into one synthesis. The evidence suggests that cloud-based CAT tools function not only as translation resources but also as part of wider pedagogical arrangements in EFL translation learning.

IV. CONCLUSION AND SUGGESTION

This systematic literature review synthesised evidence from 25 studies on the pedagogical role of cloud-based CAT technologies in EFL translation learning. It addressed a gap in the literature by bringing together three areas that are often studied separately: student learning outcomes, teaching practices, and broader pedagogical contributions. The reviewed studies commonly associated cloud-based CAT settings with translation competence, learner autonomy, digital competence, collaborative engagement, and technology adoption. CAT integration was also linked to changes in teacher roles, curriculum design, and assessment practices, as well as to learner-centred pedagogy, TELL, and authentic learning environments. Overall, the review suggests that cloud-based CAT tools are increasingly being used as pedagogical resources rather than solely as technical aids.

The findings have practical relevance for different educational stakeholders. Teachers can use cloud-based CAT technologies to assist collaborative translation assignments, authentic projects and reflective learning activities. It is recommended that curriculum writers systematically integrate translation technology literacy into EFL programs. Educational institutions are urged to boost infrastructure preparedness, teacher professional development, and long-term support for technology-enhanced learning. The findings suggest that sustainable educational advantages from CAT integration depend on the alignment of technology, pedagogy, curriculum and institutional preparation and not merely on technology acceptance.

Several limitations should be acknowledged. This review was limited to English-language academic publications released between 2020 and 2025 and identified through Scopus, Google Scholar, ERIC, and Crossref. Relevant work published in other languages, outside the selected period, or not covered by these sources may therefore have been missed. The final corpus included different publication types and methodological approaches, including conceptual and review-based work. This diversity allowed the review to cover a wider range of perspectives, but it also made direct comparison across studies more difficult. Since the review relied on published evidence rather than primary data, the conclusions should be understood as a synthesis of reported findings rather than direct empirical verification.

Future study should follow a longitudinal design to explore the long-term impact of cloud-based CAT integration on translation skill, learner autonomy, and digital literacy. Additional data from varied institutional and cultural contexts is needed to shed light on how

implementation factors influence learning outcomes. Further research can study teacher adaptation process, curriculum sustainability, AI-assisted translation and ethical issues of translation technology to improve the understanding of long-term pedagogical transformation in EFL translation education.

REFERENCES

Alfaisal, H. (2025). Evaluating students' self efficacy perception on integrating CAT tools in educational programs. *English Language Teaching*, *18*(2), 76. https://doi.org/10.5539/elt.v18n2p76

Chan, V. (2025). Enhancing translation technology skills through blended learning: A study of student perceptions and satisfaction with bMOOC in higher education. *Frontiers in Education*, *10*, 1613880. https://doi.org/10.3389/feduc.2025.1613880

Do Carmo, F., & Moorkens, J. (2020). Differentiating editing, post-editing and revision. In M. Koponen, B. Mossop, I. S. Robert, & G. Scocchera (Eds.), *Translation Revision and Post-Editing* (1st ed., pp. 35–49). Routledge. https://doi.org/10.4324/9781003096962-4

Escudeiro, P., Galasso, B., Teixeira, D., Gouveia, M. C., & Escudeiro, N. (2022). Inclusive MOOC – educational content for deaf people, a portuguese proof of concept. *Cypriot Journal of Educational Sciences*, *17*(4), 1269–1287. https://doi.org/10.18844/cjes.v17i4.7151

Granell, X., & Chaume, F. (2023). Audiovisual translation, translators, and technology: From automation pipe dream to human–machine convergence. *Linguistica Antverpiensia, New Series – Themes in Translation Studies*, *22*. https://doi.org/10.52034/lans-tts.v22i.776

Guerberof-Arenas, A., Valdez, S., & Dorst, A. G. (2024). Does training in post-editing affect creativity? *The Journal of Specialised Translation*, (41), 74–97. https://doi.org/10.26034/cm.jostrans.2024.4712

He, Y. (2021). Challenges and countermeasures of translation teaching in the era of artificial intelligence. *Journal of Physics: Conference Series*, *1881*(2), 022086. https://doi.org/10.1088/1742-6596/1881/2/022086

Hou, Q., & Zhang, L. (2022). Design and implementation of interactive english translation system in internet of things auxiliary information processing. *Wireless Communications and Mobile Computing*, *2022*(1), 3987970. https://doi.org/10.1155/2022/3987970

Khasawneh, M. A. S., & Shawaqfeh, A. T. (2024). Breaking traditional boundaries in translation pedagogy; evaluating how senior lecturers have incorporated digital tools to enhance translation teaching. World Journal of English Language, 14(4), 154. https://doi.org/10.5430/wjel.v14n4p154

Li, X., Gao, Z., & Liao, H. (2024). An empirical investigation of college students' acceptance of translation technologies. *PLOS ONE*, *19*(2), e0297297. https://doi.org/10.1371/journal.pone.0297297

Pramawati, A. A. I. Y., Agus Pramerta, I. G. P., & Erawan, D. G. B. (2024). Enhancing translation education with ratpro: A cat tools-based learning model. *English Review: Journal of English Education*, *12*(2), 717–724. https://doi.org/10.25134/erjee.v12i2.9097

Remkhe, I., & Nefedova, L. (2020). *A web-based translation platform as an integrated translation model*. 1590–1596. https://doi.org/10.15405/epsbs.2020.08.184

Rodriguez De Céspedes, B. (2020). Beyond the margins of academic education: Identifying translation industry training practices through action research. *The International Journal of Translation and Interpreting Research*, *12*(1), 115–126. https://doi.org/10.12807/ti.112201.2020.a07

Shaban, Ahmad Abdulkarem, & Ameen, Mulik H. Mohammed. (2023). Exploring the influence of CAT tools on domestication and foreignization in translation. *Contemporaneity of English Language and Literature in the Robotized Millennium*, *2*(3), 8–13. https://doi.org/10.46632/cellrm/2/3/2

Shkarban, I. V. (2025). Ai tools in translation practice. *Transcarpathian Philological Studies*, *1*(41), 279–284. https://doi.org/10.32782/tps2663-4880/2025.41.1.44

Sir Al Khatim, M. (2022). Exploring undergraduate students' perspectives toward computer-aided translation tools and machine translation: A case study of students of the english department. *Arab World English Journal*, *13*(3), 512–520. https://doi.org/10.24093/awej/vol13no3.33

Tian, S., Jia, L., & Zhang, Z. (2023). Investigating students' attitudes towards translation technology: The status quo and structural relations with translation mindsets and future work self. *Frontiers in Psychology*, *14*, 1122612. https://doi.org/10.3389/fpsyg.2023.1122612

Tsai, Y. (2020). Collaborative translation in the digital age. *Research in Language*, *18*(2), 119–135. https://doi.org/10.18778/1731-7533.18.2.01

Xiao, F. (2021). Research on CAT-based interactive collaboration mode of undergraduate translation course. *2021 4th International Conference on Information Systems and Computer Aided Education*, 1716–1719. https://doi.org/10.1145/3482632.3484024

Yudianto, H., Surtikanti, M., & Agung, A. (2025). Students' viewpoint of automatic translation tools in EFL classroom. *Pedagogy : Journal of English Language Teaching*, *13*(1), 37–63. https://doi.org/10.32332/joelt.v13i1.10482

Zappatore, M. (2024). Incorporating collaborative and active learning strategies in the design and deployment of a master course on computer-assisted scientific translation. *Technology, Knowledge and Learning*, *29*(1), 253–308. https://doi.org/10.1007/s10758-023-09679-1

Zhang, J., Zhou, L., & Bai, W. (2024). Innovative methods for integrating translation memory and CAT tools: Enhancing intelligent support in human translation processes. *Applied and Computational Engineering*, *90*(1), 1–7. https://doi.org/10.54254/2755-2721/90/2024MELB0054

Zhao, J., Li, X., & Gao, Z. (2025). From innovativeness to insecurity: Unveiling the facets of translation technology use behavior among EFL learners using TRI 2.0. *Humanities and Social Sciences Communications*, *12*(1), 436. https://doi.org/10.1057/s41599-025-04777-0

Zhao, J., Li, X., Wei, J., Long, X., & Gao, Z. (2025). Understanding the psychological pathways to translation technology competence: Emotional intelligence, self-esteem, and innovation capability among EFL students. *BMC Psychology*, *13*(1), 66. https://doi.org/10.1186/s40359-025-02400-0

Zhao, W. (2020). A practical study on college english translation teaching based on CAT technology. *Journal of Physics: Conference Series*, *1533*(2), 022062. https://doi.org/10.1088/1742-6596/1533/2/022062