



ARTIFICIAL INTELLIGENCE AND THE DEVELOPMENT OF TRANSLATION COMPETENCE IN ARAB EFL LEARNERS: A SYSTEMATIC REVIEW OF THE LITERATURE

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Abstract:

The rapid diffusion of neural machine translation and large language models has altered the conditions under which translation is learned and practiced, raising questions about how these technologies interact with the development of translation competence among learners of English as a foreign language (EFL) in the Arab world. This systematic review synthesizes theoretical and empirical scholarship in order to establish what is currently known about that interaction and where the evidence remains thin. Following a structured search of major databases, the review first reconstructs the foundational theories that underpin the construct of translation competence, including multicomponent models, process-oriented accounts of competence acquisition, social constructivist approaches to translator education, and more recent technology-oriented extensions such as machine translation literacy and post-editing competence. It then organizes empirical studies published between 2020 and 2026 into six themes: the quality and reliability of artificial intelligence output in the English–Arabic pair; learner perceptions, attitudes, and acceptance; instructional interventions and measured gains in performance; post-editing as a pedagogical route into competence; autonomy, over-reliance, and academic integrity; and curricular provision and trainer readiness in Arab programmes. The synthesis indicates broad agreement that artificial intelligence tools raise surface fluency and productivity while performing unevenly on culture-bound, idiomatic, and register-sensitive material, and that pedagogical mediation rather than tool access determines whether learners gain competence. Persistent gaps include the scarcity of longitudinal and experimental designs, the dominance of self-report instruments, the concentration of research in a small number of Arab national contexts, and the absence of validated instruments for measuring technology-inclusive translation competence in Arabic–English settings.

Keywords: artificial intelligence, translation competence, Arab EFL learners, machine translation literacy, post-editing, translator education

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1. Introduction

Translation occupies an unusual position in Arab tertiary education. It is simultaneously a professional destination, a component of English-language degree programmes, and a strategy that learners deploy informally whenever they encounter a text beyond their productive range. Each of these functions has been reshaped by neural machine translation and, more recently, by general-purpose large language models capable of producing fluent target text on demand. What was once a laborious dictionary-mediated activity can now be initiated with a single prompt, and the output frequently reaches a standard that inexperienced learners struggle to distinguish from competent human work.

This shift is not merely instrumental; it bears on the construct that translator education exists to develop. If translation competence is a structured configuration of knowledge, skills, and dispositions acquired through sustained practice, then any technology that removes the effortful stages of that practice has consequences for whether the competence forms at all. The question is not simply whether artificial intelligence produces acceptable translations, but whether learners working alongside it acquire the capacity to produce, evaluate, and defend translations themselves.

For Arab learners of English as a foreign language, the question carries additional weight. Arabic and English differ substantially in morphology, syntactic organization, rhetorical convention, and the density of culture-bound reference, and these are precisely the areas in which automated systems have historically performed least reliably. The linguistic distance between the two languages therefore creates both a heightened risk of uncritical acceptance of flawed output and a distinctive pedagogical opportunity, since the errors these systems make in this pair are often diagnostically rich.

The review pursues three aims: to reconstruct the theoretical foundations on which the construct of translation competence rests; to synthesize thematically the empirical research published between 2020 and 2026 on artificial intelligence and the translation competence of Arab EFL learners; and to identify convergences, contradictions, and gaps from which an agenda for future inquiry can be derived. Three questions guide the synthesis: which theoretical frameworks currently inform this research; what recent empirical studies report about the effects of artificial intelligence tools on Arab EFL learners' translation competence; and what methodological and substantive gaps remain.

2. Method of the Review

The review followed a structured protocol. Searches were conducted in Scopus, Web of Science, Education Resources Information Center, ScienceDirect, and Google Scholar, supplemented by targeted searching of regionally significant outlets, including the Arab World English Journal and its translation and literary studies companion. Search strings combined three concept clusters using Boolean operators: technology terms (artificial

intelligence, machine translation, neural machine translation, ChatGPT, large language model, computer-assisted translation); competence terms (translation competence, translator training, translation pedagogy, post-editing, translation quality); and population terms (EFL, Arab, Arabic, Saudi, Jordanian, Egyptian, Iraqi, Syrian, undergraduate).

Studies were included in the Related Studies section if they were published between 2020 and 2026 in peer-reviewed journals, edited volumes, or doctoral theses; reported empirical data or a systematic synthesis of it; addressed the intersection of automated translation technology and learner competence, performance, perception, or pedagogy; and were written in English or Arabic. Studies were excluded if they treated machine translation purely computationally without a pedagogical dimension, consisted of opinion pieces without data, or sampled professional translators exclusively. Theoretical works published before 2020 were retained for the Foundational Theories section, whose purpose is to establish the intellectual lineage of the construct rather than to report current evidence.

Records were screened by title and abstract and then by full text, and data were extracted on context, sample, design, instruments, technology, and principal findings. Synthesis proceeded thematically: recurring analytical concerns were identified inductively, refined through repeated comparison, and consolidated into the six themes below. Because designs and outcome measures varied widely, narrative synthesis rather than statistical aggregation was adopted.

3. Foundational Theories

Research on artificial intelligence and translation learning draws on several decades of scholarship concerned with what translation competence consists of, how it is acquired, and how it may be taught. This section reconstructs that theory in five movements, closing with an assessment of how well the inherited frameworks accommodate the technologies now in use.

3.1 The Multicomponent Conception of Translation Competence

Early accounts of translation ability treated it as a natural consequence of bilingualism, an assumption that translation studies have spent much of its modern history dismantling. The most influential alternative is the multicomponent model developed by the PACTE group, which conceptualizes translation competence as an expert system of declarative and procedural knowledge composed of interacting sub-competences (PACTE, 2003). The model distinguishes a bilingual sub-competence, an extra-linguistic sub-competence encompassing encyclopedic and cultural knowledge, a sub-competence covering knowledge about translation as a profession and a practice, an instrumental sub-competence relating to documentary resources and technologies, and a strategic sub-competence that governs planning, problem identification, and the coordination of the

other components. Psycho-physiological components such as memory, attention, and critical reasoning operate across the system.

The significance of this architecture for the present review lies in two features. First, the model is explicitly hierarchical: the strategic sub-competence is not one component among equals but the mechanism through which the others are deployed and compensated. Second, the instrumental sub-competence is integral rather than peripheral, which means that tool use was theorized as part of translation competence long before generative systems appeared. Subsequent validation work operationalized these constructs empirically, examining acceptability of translation products and the decision-making processes underlying them (PACTE, 2009), and later tracing the evolution of declarative and procedural knowledge across levels of expertise (PACTE, 2015). A further phase of the group's research addressed competence acquisition directly, describing the design and outcomes of experimental work on how the sub-competences develop over time (PACTE, 2020). Hurtado Albir (2015) drew these findings into a pedagogical framework, arguing for competence-based training organized around graded translation tasks and project work, with assessment aligned to competence descriptors rather than to error counts alone.

A parallel line of theorizing is represented by Göpferich (2009), whose TransComp model was designed for longitudinal investigation of how competence develops in individual learners. Göpferich emphasized the strategic component and translation routine activation, and specified the situational and individual factors mediating development, including the translation brief, the availability of external resources, and the translator's self-concept. Salamah (2021) synthesizes this modelling tradition, noting both its productivity and the persistent difficulty of operationalizing competence for reliable measurement.

Professional frameworks have absorbed these academic models. The framework maintained by the European Master's in Translation network organizes translator competence into five interlocking areas: language and culture; translation; technology; personal and interpersonal competence; and service provision (European Commission, 2022). Its 2022 revision was undertaken specifically to reflect a more heavily technologized workplace while insisting that human linguistic, cultural, critical, and ethical judgement remains the differentiating factor. Ramírez-Polo and Vargas-Sierra (2023) extend this position, arguing that ethical competence should be a distinct training objective in technology-rich curricula rather than an implicit by-product of professional socialization.

3.2 Process-Oriented and Cognitive Accounts of Acquisition

Whereas component models describe the structure of competence, process-oriented research addresses how it is enacted and how expertise emerges, treating translation as problem-solving in which the allocation of cognitive resources is the central variable. Its relevance here is direct: when a machine supplies a draft, the learner's task changes from generation to evaluation, and the two are not equivalent forms of practice.

The concept of cognitive offloading, the use of external resources to reduce demands on internal cognitive processes, supplies a precise vocabulary for this shift (Risko & Gilbert, 2016). Offloading is not inherently detrimental, since it frees capacity that may be redirected towards higher-order concerns. The pedagogical question is whether the capacity released by automated drafting is in fact reinvested in analysis, or whether it simply disappears, leaving the learner with a fluent product and no strengthened underlying skill. O'Brien and Ehrensberger-Dow (2020) argue that machine translation literacy must be understood cognitively rather than procedurally, since the decisive competence is the ability to anticipate where output is likely to fail, while work on the ergonomics of translation tools indicates that interface and workflow design shape cognitive load in frequently underestimated ways (Kappus & Ehrensberger-Dow, 2020).

3.3 Social Constructivism and Sociocultural Mediation

A third theoretical strand locates competence development in social interaction rather than in individual cognition alone. Vygotsky's (1978) account of the zone of proximal development, and the associated notion of scaffolding, holds that learners accomplish with assistance what they cannot yet accomplish independently, and that the assisted performance is the site at which internalization occurs. Kiraly (2000) transposed this position into translator education, arguing for a decisive move away from transmissionist instruction towards collaborative, project-based, and authentic learning environments in which students progressively assume professional responsibility. In Kiraly's formulation, the goal is not the transfer of translation knowledge but the emergence of translator competence through participation.

Sociocultural theory supplies the most productive framework currently available for conceptualizing artificial intelligence in the translation classroom, because it treats tools as mediating artefacts rather than neutral conveniences. An automated system is not simply a faster dictionary; it reconfigures the activity, redistributes agency between learner and tool, and alters what counts as a translation problem. Whether a large language model functions as a scaffold that is progressively withdrawn or as a permanent prosthesis is therefore a question about instructional design rather than about the technology itself. Dorst et al. (2022) illustrate the point, showing that the pedagogical value of machine translation depends on the tasks built around it.

3.4 Technology-Oriented Extensions: Machine Translation Literacy and Post-Editing Competence

The most direct theoretical response to automation has been the elaboration of new competence constructs. Bowker and Buitrago-Ciro (2019) introduced the notion of machine translation literacy, defined as the capacity to make informed judgements about whether, when, why, and how to use automated translation, together with the ability to prepare source texts for machine processing and to post-edit output appropriately. The construct is deliberately critical in orientation: its opposite is not ignorance of the technology but uncritical use of it. Bowker (2020) demonstrated the applicability of the

construct beyond translation programmes, developing literacy instruction for business students and their instructors, while Ehrensberger-Dow et al. (2023) extended it in two directions, arguing that machine translation literacy both protects against uninformed use that damages accuracy, adaptation, coherence, and textual convention, and constitutes a transferable competence that graduates can offer to clients as consultancy.

Running alongside this is the specification of post-editing competence. Nitzke et al. (2019) proposed a model in which post-editing draws on risk assessment competence, consulting competence, and knowledge of machine translation systems in addition to core translation competences. The model matters pedagogically because it makes explicit that post-editing is not a diminished form of translation but a distinct configuration of abilities, including the judgement to decline machine assistance where risk is high. Looock (2020) adds that corpus-based identification of the linguistic signature of machine-produced text can empower students by rendering visible the features they are expected to revise.

3.5 Acceptance, Adoption, and Learner Disposition

A final resource is drawn from information systems research. The technology acceptance model and its extension, the unified theory of acceptance and use of technology, explain adoption through perceived usefulness, perceived ease of use, social influence, and facilitating conditions, mediated by attitude and behavioral intention. These frameworks dominate survey-based research on learner engagement with translation tools, as the studies reviewed below make clear. Their strength is parsimony; their limitation is that they predict use rather than learning, and treat the tool as a stable object rather than a mediating artefact. Li et al. (2024) demonstrate the model's utility for translation technology acceptance, while related work examines how critical thinking relates to translation technology competence through the mediating roles of academic self-efficacy and cultural intelligence (Li et al., 2023), suggesting that dispositional variables deserve more attention than acceptance models typically afford.

3.6 Synthesis of the Theoretical Landscape

Taken together, these traditions supply a coherent but incomplete apparatus. Component models establish that instrumental ability belongs within translation competence and that strategic judgement governs its deployment; process-oriented research supplies the mechanism by which automation may either enrich or hollow out practice; sociocultural theory explains why the same tool can scaffold one learner and disable another; literacy and post-editing constructs identify the new abilities automation demands; and acceptance models describe the conditions under which learners adopt the technology at all.

What remains underdeveloped is an integrated account of how these elements interact in the acquisition of competence in a specific language pair. None of the major competence models was constructed with generative systems in view, and none specifies how the strategic sub-competence should operate when a plausible draft is available at

the outset of the task rather than at its conclusion. Nor do the frameworks address language-pair specificity: the risks associated with automated translation between typologically and culturally distant languages such as Arabic and English differ in kind, not only in degree, from those associated with closely related European pairs. These absences frame the empirical review that follows.

3.7 Related Studies

The empirical literature published between 2020 and 2026 is presented below under six themes derived inductively from the corpus, moving from evidence about the tools themselves, through evidence about learners, to evidence about instruction and institutional provision.

Theme One: Output Quality and Reliability in the English–Arabic Pair

A substantial body of work examines what automated systems actually produce between Arabic and English, on the premise that pedagogical recommendations must rest on an accurate picture of tool performance. Almahasees (2021) provides the most systematic treatment, comparing Google Translate, Microsoft Translator, and Sakhr across text types and documenting the weaknesses of each. Abdelaal and Alazzawie (2020) narrowed the focus to Arabic–English news translation, identifying recurrent difficulties with lexical selection, collocational patterning, and culturally embedded expressions.

Studies published after the appearance of large language models report a marked improvement in surface fluency without a corresponding resolution of the deeper problems. Alafnan (2024) compared large language model output with conventional machine translation and characterized the newer systems as computational linguistic instruments whose performance varies by task rather than improving uniformly. Work on audiovisual material has proved particularly diagnostic, since subtitling compresses linguistic, cultural, and technical constraints into a single task. Al Sammarraie and Ghassemiazghandi (2024) analyzed the post-editing of neural machine translation subtitles from English into Arabic, applying Gottlieb's typology of subtitling strategies and identifying persistent difficulties in linguistic fidelity, cultural adaptation, and technical constraints. Paraphrasing emerged as the strategy most frequently required, since a large proportion of dialogue demanded localization and modification to be intelligible to an Arabic-speaking audience, while transcription, cultural substitution, and deletion were needed less often. The authors emphasize that human expertise remains decisive in refining machine-generated output.

The pattern across this theme is consistent. Automated systems in the English–Arabic pair now produce output that is grammatically well-formed and superficially natural, but they continue to falter on idiomatic expression, culture-bound reference, register, and rhetorical convention. The pedagogical implication is significant: the errors that remain are precisely those that inexperienced learners are least equipped to detect, since detection requires the extra-linguistic and cultural knowledge the learner is still acquiring.

Theme Two: Perceptions, Attitudes, and Acceptance among Arab EFL Learners

The largest cluster of studies in the Arab context investigates what learners think about these tools and how extensively they use them. Almusharraf and Bailey (2023) surveyed 310 Saudi and 160 South Korean university students on their perceptions and practices, situating Arab learners within a comparative frame and confirming that machine translation is embedded in routine academic work rather than reserved for translation tasks proper. Alqahtani and Alsuhaibani (2024) applied an adapted technology acceptance instrument to Saudi EFL students, measuring perceived ease of use, perceived usefulness, attitude, actual use, and intention for future use, and reported the generally favorable dispositions that characterize this literature.

Perception studies focused specifically on generative systems report a similar pattern with additional nuance. Alharthi (2024) found variable engagement among Saudi EFL students, with weekly use common, and argued that understanding learner perceptions is a precondition for aligning tools with learner profiles. Alharbi and Al-Ahdal (2025) combined an acceptance framework with a sociocultural lens to examine perceptions, attitudes, and intentions, and in doing so addressed a limitation acknowledged across the theme: that descriptive acceptance data reveal little about learner agency, identity, or the quality of sustained engagement. Alyami et al. (2025) documented parallel perceptions in relation to writing, and Mubarak (2026) concluded a study of translation applications in Saudi Arabia by arguing that the opportunities they present depend on pedagogical discipline, digital literacy, and ethical awareness rather than on the tools themselves.

Two observations apply to this theme as a whole. It is dominated by cross-sectional self-report instruments administered at a single point in time, which capture disposition rather than development; and it is concentrated overwhelmingly in Saudi Arabia, with smaller contributions from Jordan and Iraq and very little from the Levant or North Africa. Findings should therefore be treated as indicative of particular national contexts rather than of Arab EFL learners generally.

Theme Three: Instructional Interventions and Measured Gains in Performance

A smaller but more probative group of studies moves beyond perception to measure what happens when artificial intelligence is deliberately integrated into instruction. Alotaibi and Salamah (2023) examined the effect of translation applications on translation students' performance, noting explicitly that although translation technologies have become integral to professional practice, evidence about their effect on translation quality and translator performance remains insufficient. Mahdi et al. (2022) adopted an experimental design with 47 EFL students at a Saudi university, randomly allocated to two groups, and reported effects on the translation of collocations, a category chosen precisely because it exposes the boundary between lexical knowledge and formulaic competence. The relevance of that category is reinforced by Sonbul et al. (2022), who examined the relationship between collocation knowledge and translation competence and found that congruency and word type affect accuracy.

Intervention studies focused on generative systems are more recent. Abdelhalim, Alsahil, and Alsuhaibani (2025) worked with 63 Saudi EFL student translators, 27 novices and 36 advanced, comparing their evaluations of literary translations produced by Google Translate and by ChatGPT in terms of accuracy, fluency, and cultural understanding through a mixed-methods design combining a pre-survey, a questionnaire, and reflection sheets. The intervention consisted of a series of five online workshops training participants to use ChatGPT for literary translation, and the authors concluded that training in prompt construction played a crucial role in determining how effectively the tools could be used. In a companion study, Abdelhalim, Alsuhaibani, and Alsahil (2025) examined the effect of ChatGPT training on student translators' self-efficacy in literary translation, extending the outcome measure beyond product quality to learner belief.

Comparable findings outside the Arab context provide triangulation. Kruk and Kałużna (2025) investigated the role of artificial intelligence tools in enhancing translation skills, emotional experience, and motivation among second language learners, treating affect as an outcome in its own right. Chung and Ahn (2022) found that the effects of machine translation on linguistic features in second language writing are conditional on proficiency and genre rather than uniform. Maghsoudi and Mirzaeian (2020) compared machine and human output as a support for reading comprehension, and Yang et al. (2023) replicated earlier work in a Chinese EFL writing context. Two syntheses frame the theme. Lee (2023) reviewed 87 machine translation studies in foreign language education published between 2000 and 2019, reporting that publication has increased sharply, that quality has improved significantly, and that most studies report positive effects particularly for writing, while also finding that students hold mixed feelings and that instructor and student perceptions diverge. Klimova et al. (2023) followed PRISMA procedures across Scopus and Web of Science and concluded that neural machine translation supports both productive and receptive skills, including the mediation skills closest to translation. Jolley and Maimone (2022) provide a further review.

Theme Four: Post-Editing as a Route into Competence Development

A pedagogically promising strand treats post-editing not as a concession to automation but as a structured route into competence, on the logic that revising machine output requires the learner to compare, diagnose, and justify, which are precisely the operations competence models place at the strategic center of translation.

In the Arab context, this strand is comparatively well developed. Eljazouli and Azmi (2024) examined the linguistic, terminological, and cultural complexities that arise in post-editing English into Arabic, using a comparative descriptive design with participants working in a computer-assisted translation environment, and catalogued recurrent difficulties spanning grammar, syntax, spelling, punctuation, style, formatting, accuracy, terminology, and semantics. Their stated aim was to raise awareness of these issues so that they can be addressed in post-editing instruction. Nassar (2025) narrowed the focus to technical texts, analysing the technological and linguistic barriers that impede

post-editing from English into Arabic. Mudheher and Ghassemiazghandi (2024) reported directly on the enhancement of post-editing skills among Iraqi undergraduate students, providing one of the few interventionist accounts situated outside the Gulf. Samman (2022) evaluated post-editing training within undergraduate translation programmes in Saudi Arabia in an exploratory doctoral study, and the findings point to uneven and often minimal provision.

The theoretical framing of this work is supplied by the constructs discussed earlier. Studies that invoke machine translation literacy or post-editing competence explicitly tend to produce more differentiated findings than those treating post-editing as error correction, since the former direct attention to risk assessment and to the decision not to use automated assistance at all.

Theme Five: Autonomy, Over-Reliance, and Academic Integrity

A fifth theme gathers studies concerned with the costs of automation. Alharbi (2023) framed the issue directly in an exploratory study of the use and abuse of artificial intelligence-enabled machine translation in the EFL classroom, and the distinction between use and abuse recurs throughout this literature. The general educational research supplies the mechanism: Zhai et al. (2024) synthesized evidence that over-reliance on artificial intelligence dialogue systems is associated with diminished critical thinking, analytical reasoning, and decision-making, a finding consistent with the cognitive offloading account outlined earlier.

For translation specifically, the concern is sharper, because the tool performs the entire target task rather than assisting with a component of it. Where a calculator removes arithmetic from a mathematical problem, a large language model removes translation from a translation problem. Recent scholarship has begun to address the assessment consequences, examining how unauthorized machine translation use in student translations can be detected and arguing that detection-led responses should give way to proactive literacy training that specifies when and to what extent automated assistance is authorized for each task. Ramírez-Polo and Vargas-Sierra (2023) approach the same problem from the direction of curriculum, proposing that ethical competence be taught explicitly within translation technology instruction.

The evidence for cognitive harm in translation learning specifically remains largely inferential, however. Most studies documenting over-reliance effects are drawn from general higher education or writing instruction, and their extension to translation competence is theoretically plausible but not yet empirically demonstrated in the Arab EFL context.

Theme Six: Curricular Provision and Trainer Readiness in Arab Programmes

The final theme concerns institutional conditions. Evidence from Saudi translator training programmes indicates that translation technology courses are present in curricula but occupy a limited share of the overall programme, frequently amounting to one or two courses, with the result that instrumental competence receives less systematic

development than the component models would recommend. Samman's (2022) evaluation of post-editing training reaches a similar conclusion. Kanglang and Afzaal (2021) offer a critical perspective on the transformation of translation teaching under artificial intelligence, arguing that curricular adaptation has lagged behind technological change.

Trainer readiness compounds the difficulty. The proposal that trainers might themselves become machine translation literacy consultants presupposes institutional expertise that the Arab regional literature does not yet document (Ehrensberger-Dow et al., 2023). Studies of instructor perception consistently report greater skepticism among teachers than students, a divergence Lee (2023) identified as a general feature of the field and one that has direct consequences for whether tools are integrated pedagogically or simply prohibited.

3.8 Synthesis of Findings and Research Gaps

3.8.1 Points of Convergence

Four findings recur with sufficient consistency to be treated as reasonably established. Artificial intelligence tools in the English–Arabic pair produce fluent output whose remaining weaknesses cluster in culture-bound, idiomatic, and register-sensitive material. Arab EFL learners use these tools extensively and hold broadly favorable attitudes towards them, with usage embedded in general academic work rather than confined to translation tasks. Measurable gains in performance are associated with structured instruction in tool use, particularly training in prompt construction and systematic post-editing, rather than with access alone. And instructors are consistently more cautious than students, a divergence that shapes whether tools are integrated or prohibited.

3.8.2 Points of Divergence and Methodological Limitations

Against these stand significant inconsistencies. Studies disagree about whether automated assistance improves or degrades competence, and much of the disagreement is attributable to outcome measures: research assessing product quality tends to report benefits, while research assessing learner processes or retention tends to report costs. Studies also disagree about the moderating role of proficiency, some finding that stronger learners benefit disproportionately and others reporting the reverse.

Four methodological limitations characterize the corpus. Cross-sectional self-report designs predominate, so most of what is known concerns perception at a single moment rather than development over time. Samples are frequently small and convenience-based, and randomization is rare. Outcome measures are heterogeneous and often locally devised, preventing aggregation. And the pace of technological change means findings about specific systems date quickly.

3.8.3 Gaps in the Arab EFL Literature

Five gaps are particularly consequential. Longitudinal evidence is almost absent: no study in the corpus tracks the development of translation competence in Arab EFL learners across an academic programme under conditions of routine artificial intelligence use. Geographical coverage is uneven, with Saudi Arabia heavily over-represented and the Levant, North Africa, and the smaller Gulf states barely represented. No validated instrument exists for measuring technology-inclusive translation competence in the Arabic–English pair, which forces ad hoc measures and prevents cumulative comparison. Directionality is under-examined, since most studies address translation into Arabic or treat direction as incidental, although the competence demands of the two directions differ substantially for learners whose dominant language is Arabic. Finally, the affective and identity dimensions of working alongside artificial intelligence, including self-efficacy, professional self-concept, and motivation, have received limited attention.

3.8.4 Directions for Future Research

These gaps suggest a research agenda. Longitudinal designs following cohorts across two or more years would establish whether early gains persist and whether competence trajectories differ under different regimes of tool use. Quasi-experimental studies comparing structured post-editing instruction with conventional instruction, using common outcome measures, would allow claims about pedagogical effectiveness to be tested rather than asserted. Developing and validating an instrument for technology-inclusive translation competence in the Arabic–English pair would be a significant contribution in itself. Process-oriented methods including keystroke logging, screen recording, and think-aloud protocols would open the black box between tool use and learning outcome. Finally, replication of Gulf-based studies in Levantine and North African contexts would establish whether current findings generalise across the Arab region or reflect particular institutional conditions.

4. Conclusion

This review set out to establish what is known about the relationship between artificial intelligence and the development of translation competence among Arab EFL learners, and to identify where the evidence remains inadequate. The theoretical foundations are substantial: multicomponent models establish that instrumental ability is integral to translation competence and that strategic judgement governs its deployment; process-oriented research explains how automation redistributes cognitive effort; sociocultural theory clarifies why the same tool may scaffold one learner and disable another; and machine translation literacy and post-editing competence name the abilities automation newly demands. What the inherited frameworks do not yet provide is an integrated account of competence acquisition under conditions in which a plausible draft is available at the outset of the task rather than produced through it.

The empirical picture assembled from studies published between 2020 and 2026 is coherent in outline and thin in detail. Automated systems working between English and Arabic now produce fluent output whose residual failures are concentrated in exactly the culture-bound and register-sensitive material that novice learners are least able to detect; Arab EFL learners use these systems extensively and view them favorably; gains in performance follow from structured instruction rather than from access; and instructors remain more skeptical than students. Beyond this, the evidence is dominated by cross-sectional self-report data drawn from a narrow range of national contexts, with almost no longitudinal or process-oriented work and no validated measurement instrument.

The practical implication follows from the theoretical analysis. If translation competence is acquired through mediated, effortful practice, the pedagogical task is neither to prohibit artificial intelligence nor to permit it indiscriminately, but to design tasks in which the tool is positioned as a scaffold that is progressively withdrawn and the learner is required to diagnose, justify, and defend every decision to accept or reject what the machine proposes. Whether such designs in fact produce more competent translators remains, on the present evidence, an open empirical question, and one the region's researchers are well placed to answer.

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Conflict of Interest Statement

The author declares no conflicts of interest.

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