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| RESEARCH ARTICLE

A Self Systematic Review of Translation Error Studies (2000–2025): The Case of Students' Errors in English–Arabic and Arabic–English Translation

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| ABSTRACT

Despite the plethora of empirical studies on students' translation errors, no systematic reviews (SRs) or meta analyses (MAs) have been conducted in this area. Existing reviews are largely narrative or theoretical, leaving a clear gap in synthesizing evidence on English–Arabic and Arabic–English translation errors produced by student translators. This study addresses this gap by conducting a self systematic review of the author's empirical research published between 2000 and 2025. It aims to identify translation error types, strategies, and causes, and to map the linguistic and cognitive factors that shape students' translation performance. A corpus of 19 studies was compiled and organized into five thematic clusters: (i) nonliteral and culturally bound expressions, (ii) scientific and technical terminology, (iii) lexical and collocational errors, (iv) grammatical and syntactic errors, and (v) human vs. AI comparative translation studies. Across these clusters, the review reveals consistent patterns in students' translation behavior. Recurring error types include literal translation, avoidance, partial translation, transliteration, substitution by synonyms, and paraphrase. The most difficult structures for students were opaque metaphors, culture specific idioms, ibn/bint expressions, polysemes, chemical common names, complex SVO/VSO patterns, and grammatical agreement. Moderately difficult items included binomials, numeral based expressions, om/abu expressions, neologisms, and collocations, while transparent metaphors, simple kinship terms, basic plurals, and straightforward SVO/VSO sentences were comparatively easier. Error sources include limited L1 and L2 lexical knowledge, insufficient exposure to domain specific terminology, restricted cultural knowledge, inadequate collocational competence, and weak morphosyntactic competence in Arabic. Additional causes involve structural interference from English, limited ability to analyze complex source structures, and insufficient awareness of fixed expressions as holistic semantic units. Collectively, the studies highlight the need for explicit instruction in metaphorical mapping, collocational behavior, semantic disambiguation, domain specific vocabulary, scientific nomenclature, and cultural understanding. They also underscore the importance of contrastive analysis of English–Arabic structures and training in discourse level translation strategies that move beyond literal meaning. This review provides the first structured map of translation error patterns in this language pair, filling a critical gap in SR and MA research and supporting the development of more effective, data driven translator training programs in Saudi Arabia.

| KEYWORDS

Systematic review (SR), translation studies, student translators, Al-Jarf's translation studies, Arabic-English translation studies, English-Arabic translation studies, literal translation, translation error types translation strategies, translation error sources.

| ARTICLE INFORMATION

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1. Introduction

Research on human translation errors has been active for nearly six decades, and Arabic–English translation error research has been developing for about 40–45 years, producing a substantial body of empirical studies that examine student-translators' performance across a wide range of linguistic domains, including morphology, syntax, lexicon, collocation, idioms, metaphors, and

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culturally bound expressions. Despite this growth, the field remains fragmented. Most studies adopt small-scale, course-based, or corpus-based designs that analyze specific structures or error types in isolation. While these studies provide valuable insights into particular translation challenges—such as plurals, pronouns, collocations, polysemes, metaphors, or technical terminology—their findings have not been synthesized to reveal broader patterns across domains, proficiency levels, or translation directions. As a result, the field lacks a comprehensive understanding of which structures consistently pose translation difficulty for student-translators, which strategies they rely on, and what underlying linguistic or cognitive factors contribute to recurring errors.

A review of the literature has revealed a striking absence of systematic reviews (SRs) or meta-analyses (MAs) studies on human translation errors, in general, and English–Arabic and Arabic-English translation errors in particular. Only two SR studies that focus on human translation performance were identified: one on the Chinese–English translation of public signs (Amenador & Wang, 2022) and another on film title translation (Hu, Halina & Zin, 2025).

In contrast, a growing body of SR/MA research has emerged in the field of machine translation (MT), especially concerning Arabic–English MT performance and its pedagogical implications. Recent examples include SR/MA on AI-based Arabic translation, linguistics, and pedagogy (Al Jarf, 2026c); the benefits and challenges of AI translation tools in higher-education settings (Nguyen et al., 2025); MT evaluation between Arabic and English during 2020–2024 (Saeed, 2025); AI in healthcare translation (Raído, 2024); comprehensive reviews of Arabic–English MT development (Sidiya et al., 2024); AI in clinical translation and interpretation (Genovese et al., 2024); English–Arabic MT procedures and challenges (Al Maaytah, Aalzobidy & Alwidyan, 2024); challenges in rendering Arabic text into English using MT (Almaaytah & Alzobidy, 2023); MT for low-resource languages (Benito Santiago et al., 2022); and systematic reviews of fansubbing and audiovisual translation (Castañeda, Aguilar & Toribio, 2025). Collectively, these studies demonstrate a strong methodological shift toward evaluating MT systems, while systematic syntheses of human translation performance remain largely unexplored.

While SRs and MA research have proliferated in areas such as machine translation evaluation, AI-assisted translation, and audiovisual translation, no SR/MA exist for studies examining human translation errors in the English-Arabic language pair. This absence of SR/MA studies on English–Arabic and Arabic-English translation errors produced by student-translators highlights a significant gap in the field. Addressing this gap is crucial for understanding the linguistic structures that pose challenges for student-translators, the types of errors that recur across studies, the translation strategies students employ, and the underlying causes of these errors. Therefore, the present study conducts a self-systematic review of the author's empirical research published between 2000-2025 studies on English–Arabic and Arabic-English translation errors. It aims to shed light on the translation error types, strategies and causes and to map the cognitive and linguistic factors that shape students' translation performance.

This SR is both timely and necessary. It addresses a major gap in translation studies: the absence of any systematic or meta-analytic synthesis of English–Arabic and Arabic–English translation errors produced by student translators. Although numerous individual studies on translation errors have accumulated over the past four decades, their findings remain dispersed across domains, genres, and linguistic structures. This review brings together evidence from two and a half decades of research on English–Arabic translation errors, offering the first comprehensive map of recurring error patterns, problematic linguistic structures, and the cognitive challenges that consistently affect students' performance in both translation directions. It provides a structured, evidence-based account of the linguistic features that pose the greatest difficulty for student translators, the strategies they employ, and the underlying sources of their errors. Such a synthesis not only fills a critical gap in the literature but also supports the development of more targeted, data-driven approaches to translator pedagogy.

The study is also important because it offers an evidence-based foundation for improving translation pedagogy. By identifying which structures are most difficult, which error types recur across studies, and which strategies students rely on—whether effective or faulty—the review generates insights that can inform translation pedagogical interventions and assessment practices. Translation instructors and teacher-training programs can use these findings to prioritize high-difficulty structures, address persistent gaps in translation competence, and design translation practice materials that strengthen students' analytical and problem-solving skills in translation.

Methodologically, the study contributes to the field by applying SR procedures to an area that has traditionally relied on isolated case studies. This approach enhances the reliability and generalizability of conclusions about student-translator performance. It also establishes a replicable framework for future SR/MA research in Arabic–English and english-Arabic translation, encouraging more rigorous synthesis of empirical findings in a domain where such work is still rare.

Furthermore, the study has broader implications for understanding the interface between language proficiency, cultural knowledge, and translation competence. By synthesizing evidence across multiple linguistic domains—lexical, grammatical, syntactic, collocational, metaphorical, and culturally bound expressions—the review highlights the multidimensional nature of translation difficulty and the interplay between L1 and L2 knowledge. This contributes to theoretical models of translation competence and supports the development of more nuanced, context-sensitive approaches to translator education.

Finally, this study is part of an ongoing series of SR/MA studies by the author, which already includes an SR/MA of 2024–2025 studies on AI Arabic translation, linguistics and pedagogy (Al-Jarf, 2026c); an SR/MA of studies on children's language acquisition and development in Saudi Arabia (Al-Jarf, 2026a), and an SR/MA of studies on Arabic–English transliteration of personal names and public signages (Al-Jarf, 2026b).

2. Methodology

2.1 The study corpus

Cluster 1: Non-literal and culturally bound expressions

This cluster includes 8 studies: expressions of impossibility (Al-Jarf, 2024); ibn and bint fixed expressions (Al-Jarf, 2023); numeral-based formulaic expressions: (Al-Jarf, 2023); time metaphors (Al-Jarf, 2023); color-based metaphorical expressions (Al-Jarf, 2019); Arabic and English dar (house) and bayt (home) expressions (Al-Jarf, 2022); Arabic om- and abu-expressions (Al-Jarf, 2017); translation of English and Arabic binomials by advanced and novice student translators (Al-Jarf, 2016). These studies focus on non-literal meaning, conceptual mapping, metaphorical transfer, cultural specificity, idiomaticity, and fixed semantic structures.

Cluster 2: scientific and technical terminology

This cluster includes 1 study: The translation English and Arabic common names of chemical compounds by student translators (Al-Jarf, 2022i). This study focuses on terminological precision, scientific conventions, and domain knowledge.

Cluster 3: Lexical and collocational errors

This cluster includes 4 studies: challenges that undergraduate student translators face in translating polysemes (Al-Jarf, 2022); translation students' difficulties with English neologisms (Al-Jarf, 2010); undergraduate student-translators' difficulties in translating English word + preposition collocations (Al-Jarf, 2022n); word+particle collocation errors in English-Arabic translation (Al-Jarf, 2009b). These studies focus on semantic ambiguity, lexical innovation, and context-dependent meaning, collocational restrictions, particle usage, and lexical patterning.

Cluster 4: grammatical and syntactic errors

This cluster includes 4 studies: issues in translating English and Arabic plurals (Al-Jarf, 2020). interlingual pronoun errors in English-Arabic translation (Al-Jarf, 2010); SVO word order errors in English-Arabic translation (Al-Jarf, 2007); grammatical agreement errors in L1/L2 translation (Al-Jarf, 2000). These studies focus on structural interference, morphosyntactic mismatches, and sentence-level errors.

Cluster 5: human vs AI comparative studies

This cluster includes 2 studies: Human vs AI translation of common names of chemical compounds (Al-Jarf, 2025); translation of Arabic expressions of impossibility by AI and student-translators (Al-Jarf, 2025). These studies focus on comparative performance of AI and humana translations, error overlap, and divergence between human and AI output.

2.2 Eligibility (Inclusion & Exclusion) Criteria

To be included in the corpus, studies had to meet the following criteria: (1) they must be authored by Reima Al Jarf; (2) they must have been published between 2000 and 2025; and (3) they must contain extractable quantitative or qualitative data relevant to students' translation errors. An external database search was not required because the dataset represents a closed, predefined research program consisting of all translation-related studies authored by Al Jarf during the specified 25-year time frame. This corpus is fully indexed across major academic platforms (Google Scholar, ResearchGate, Semantic Scholar, Academia, SSRN, Scopus, and others) and constitutes the complete body of the author's research on students' translation errors. As no additional eligible studies exist outside this corpus, conducting an external search would not have yielded new records and was therefore methodologically unnecessary.

Based on these criteria, several studies by the author were excluded because they fall outside the scope of students' translation errors such as the SR/MA *of 2024–2025 studies on AI Arabic translation, linguistics and pedagogy* (Al-Jarf, 2026c).

Second, studies on translation not related to students were excluded, such as translation issues in multiple Arabic equivalents to English medical terms (Al-Jarf, 2018a); emerging political expressions in Arab Spring media with implications for translation pedagogy (Al-Jarf, 2022c); pan Arab linguistic and translation errors and strategies in bilingual linguistic landscapes (Al-Jarf, 2025j); whether to translate or not Arabic and foreign shop names in Saudi Arabia (Al-Jarf, 2024b); and translation aspects of English and Arabic acronyms (Al-Jarf, 2023a).

Third, studies that focus on interpreting competence, pedagogy, or pronunciation rather than translation errors were excluded. These include a comparative study of directionality in English-Arabic and Arabic-English interpreting competence of undergraduate student interpreters (Al-Jarf, 2022d); feasibility of digital multimedia language labs for interpreting instruction as perceived by interpreting instructors in Saudi Arabia (Al-Jarf, 2021c); integrating current global events and technology in interpreting practice (Al-Jarf, 2022h); student-interpreters' foreign proper noun pronunciation errors in English-Arabic and Arabic-English media discourse interpreting (Al-Jarf, 2022k); text-to-speech software as a resource for independent interpreting practice by undergraduate interpreting students (Al-Jarf, 2022l); teaching interpreting for tourism purposes (Al-Jarf, 2021e); effect of background knowledge on auditory comprehension in interpreting courses (Al-Jarf, 2018a; Al-Jarf, 2018); what instructors and students should know about interpreting problems (Al-Jarf, 2015); how to teach liaison interpreting to beginners (Al-Jarf, 2007a); and bridging the gap between teacher and learner in liaison interpreting (Al-Jarf, 2000a).

Fourth, studies that analyze testing, grading, or evaluation rather than translation errors were excluded. These include online exams in language, linguistics and translation courses during the pandemic in Saudi Arabia (Al-Jarf, 2022j); grade inflation at Saudi universities before, during and after the pandemic (Al-Jarf, 2022e); grade inflation in language and translation courses at Saudi schools and universities (Al-Jarf, 2022f); critical analysis of translation tests in 18 specialized translation courses (Al-Jarf, 2021b); an analytical study of translation tests (Al-Jarf, 2003); linguistic and measurement considerations in translation tests (Al-Jarf, 2002a); reflections on translation assessment (Al-Jarf, 2002b); and issues in translation assessment (Al-Jarf, 2001).

Fifth, studies on translation pedagogy were excluded because they focus on instructional methods rather than translation error analysis. These include how EFL, linguistics and translation instructors engage students in distance learning during the Covid-19 second wave (Al-Jarf, 2022g; Al-Jarf, 2021d); teaching translation for specific purposes (Al-Jarf, 2006); and online collaboration in translation instruction among students and instructors (Al-Jarf, 2008b).

Sixth, studies that analyze AI performance rather than student translation errors such as *copilot's English translation of contrastive emphatic negation in Arabic discourse* (Al-Jarf, 2025e); *comparison of translations from five languages into English and Arabic by Google Translate (2012–2025)* (Al-Jarf, 2025i); *whether ESP students can use artificial intelligence for translating common names of chemical compounds* (Al-Jarf, 2025d; Al-Jarf, 2025j); *translation of English and Arabic "sleep" terms and formulaic expressions by artificial intelligence: a comparison of Copilot and DeepSeek* (Al-Jarf, 2025m); *Copilot vs DeepSeek's translation of denotative and metonymic Abu- and Umm- animal and plant folk names in Arabic* (Al-Jarf, 2025f); *whether artificial intelligence (AI) can translate Arabic Abu-brand names with different prompts* (Al-Jarf, 2025c); *translation of Arabic folk medical terms with Om and Abu by Microsoft Copilot and DeepSeek* (Al-Jarf, 2025l); *DeepSeek, Google Translate and Copilot's translation of Arabic grammatical terms used metaphorically* (Al-Jarf, 2025g; Al-Jarf, 2025h); *translation of zero expressions by Microsoft Copilot and Google Translate* (Al-Jarf, 2025n); *AI translation of full-text Arabic research articles: the case of educational polysemes* (Al-Jarf, 2025a); *AI translation of the Gaza-Israel war terminology* (Al-Jarf, 2025b); *translation of medical terms by Microsoft Copilot and Google Translate* (Al-Jarf, 2024c, Al-Jarf, 2024d); *Google's English-Arabic translation of technical terms* (Al-Jarf, 2021; Al-Jarf, 2016b); *current status and future perspectives on the electronic translation between Arabic and European languages:* (Al-Jarf, 2012).

Seventh, studies on translation technology that focus on tools and training rather than translation errors were excluded. These include *technology integration in translator training in Saudi Arabia* (Al-Jarf, 2017b); *how to use the OmegaT translation memory* (Al-Jarf, 2009a); and *how to use a translation memory* (Al-Jarf, 2011).

Finally, studies on translator employment were excluded because they address workforce issues rather than translation performance. These include *benchmarks for staffing translation departments in Saudi Arabia* (Al-Jarf, 2008a); and *the pandemic job market from the perspective of female languages and translation college graduates in Saudi Arabia* (Al-Jarf, 2022m; Al-Jarf, 2021f).

2.3 Corpus Characteristics

The corpus demonstrates a level of diversity that reflects the multidimensional nature of Arabic–English and Enlgish-Arabic translation by students. The 19 studies examine translation errors across several linguistic domains, including fixed and formulaic expressions, metaphors and figurative language (such as expressions of impossibility, *om* and *abu*, *ibn* and *bint*, *dar* (house) and *bayt* (home), numeral-based expressions, time metaphors, color-based metaphorical expressions, and binomials), polysemy, neologisms, lexical ambiguity, scientific and technical terminology, grammar and syntax errors, lexical combination errors, collocations, and human vs AI translation studies.

Despite the variation in linguistic focus, all studies share a unified objective: to document, classify, and evaluate translation errors, and to identify the translation strategies and underlying sources of these errors. To maintain methodological coherence, the studies were organized into 5 thematic clusters based on their primary linguistic domain. Quantitative outcomes were synthesized within these clusters as part of the SR, while qualitative insights were integrated narratively to contextualize error patterns and interpret variations across clusters.

2.4 Information Sources

All studies included in the corpus originate from the author's publication record and are publicly accessible across major academic platforms, including Google Scholar, ResearchGate, Semantic Scholar, SSRN, Academia, Harvard Library, and others, with two studies additionally indexed in Scopus. Because the corpus represents a complete and self-contained research program, no external database search was required. The studies were conducted over a 25-year time period (2000 and 2025), a period during which the author systematically investigated students' translation errors using consistent methodological procedures. This temporal and methodological alignment minimizes intervening variables and allows the SR to isolate translation errors with a high degree of internal consistency. Synthesizing these studies enables the identification of recurrent weaknesses, systematic patterns, and cross-context inaccuracies, producing the first comprehensive performance map of students' translation errors.

2.5 Data Extraction

From each study, the following information was extracted: Sample size and number of student participant, item description; linguistic context; type of data analyzed (expressions of impossibility, om- and abu-, ibn and bint, dar (house) and bayt (home), time metaphors, numeral-based, color-based metaphorical expressions, binomials, polysemes, neologisms, common names of chemical compounds, grammatical and syntactic structures (such as plurals, word order, grammatical agreement), lexical combinations (collocations, neologisms, and polysemes); research instruments, where applicable (translation tests, surveys). Quantitative outcomes included percentages, accuracy scores, mean, median, and range of error scores), while qualitative outcomes consisted of classifications of error types, translation strategies and error causes. This extraction framework ensured consistency across the 19 studies and allowed for both statistical aggregation and narrative interpretation.

2.6 Data Synthesis

Data synthesis combined both quantitative and qualitative approaches. Studies reporting numerical outcomes—such as error counts, proportions of correct and incorrect translations, mean, median and range of error scores—were aggregated to identify measurable performance patterns across the corpus. Studies presenting qualitative linguistic findings, including classifications of error types, translation inaccuracies, and strategy use, were synthesized narratively and organized into the 5 thematic clusters. This dual-level synthesis allowed the review to capture both the statistical distribution of errors and the deeper linguistic patterns underlying students' translation performance.

2.7 PRISMA Flow Description

The number of records identified corresponds to the complete set of 19 translation studies authored by Al Jarf between 2000 and 2025. These records were obtained from the author's publication list and cross-verified across Google Scholar, ResearchGate, Academia, Semantic Scholar, SSRN, and Scopus. Because the corpus is predefined and closed, all 19 records were screened. Each study was confirmed to be a fully or partially incorrect-translation-focused publication and met all inclusion and eligibility criteria. Consequently, all 19 studies were included in the final synthesis.

3. Results

3.1 Overview

This subsection presents the results of the 19 studies included in this SR, organized into five thematic clusters representing the major domains of students' translation errors. These domains encompass expressions of impossibility, *om* and *abu* expressions, *ibn* and *bint* expressions, *dar* (house) and *bayt* (home), numeral-based expressions, time metaphors, color-based metaphorical expressions, binomials, scientific and technical terminology, plurals, word order, grammatical agreement, collocations, and other lexical-level errors (polysemy, neologisms). Each cluster summarizes the quantitative accuracy measures and qualitative mistranslations reported in the original studies. The results are descriptive and present the findings exactly as documented in the primary studies, without interpretation or evaluative commentary.

3.2 Study Characteristics

The 19 studies included in this SR were conducted between 2000 and 2025 and form a coherent research program on human Arabic–English and English–Arabic translation practices. Despite differences in linguistic focus, the studies share core methodological features that make them suitable for synthesis: all rely on corpus-based analysis, draw on naturally occurring linguistic data, and report quantitative measures such as frequencies, percentages, error rates, mean, media, and range of errors. These shared characteristics enable systematic comparison across studies.

Across all clusters, the studies employ a unified analytical framework that categorizes translation errors into literal word-for-word translation, partial translation, use of synonyms, giving explanations, avoidance (leaving response blank) and other recurrent error types. Although dataset sizes vary, each study provides sufficient quantitative detail to allow cross-study comparison. The reliance on comparable sources of data—students' translation assignments and lists of items compiled by the author—ensures consistency

across contexts and provides a robust empirical foundation for synthesizing patterns of variation and error in Arabic–English and English–Arabic translation.

The studies fall into five clusters based on the type of translation data examined: non-literal and culturally bound expressions, scientific and technical terminology, lexical and collocational errors, grammatical and syntactic errors, and human vs AI translation error studies. This classification reflects the diversity of translation contexts while maintaining clear boundaries between data types. The detailed characteristics of each cluster are presented in the following sections.

Cluster 1: Non-literal and culturally bound expressions

The eight studies in this cluster investigated students' difficulties in translating non-literal, metaphorical, and culturally embedded expressions between English and Arabic. Although each study focuses on a different type of metaphorical or fixed expression (expressions of impossibility, ibn/bint kinship metaphors, numeral-based formulaic expressions, time metaphors, color metaphors, om/abu expressions, dar vs. bayt, and English–Arabic binomials) they collectively reveal a consistent pattern: student-translators struggle to interpret and translate expressions whose meanings cannot be derived compositionally from their lexical component parts.

The study on expressions of impossibility (Al-Jarf, 2024)-showed that students translated fewer than 35% of items correctly and left many blank. Transparent expressions (e.g., a needle in a haystack, يبكي على اللبن المسكوب) were translated successfully, whereas opaque expressions (ghost of a chance, near the knuckle, لما تشوف حلمة ودنك) were frequently mistranslated or avoided. Students relied heavily on literal translation, paraphrase, partial translation, and extraneous equivalents, reflecting difficulty accessing the underlying metaphorical meaning and cultural knowledge.

The study on ibn (son) and bint (daughter) expressions (Al-Jarf, 2023) revealed even greater difficulty. Students left 75% of all items blank and produced correct translations for only 12% of the expressions. Transparent kinship metaphors (e.g., like mother like daughter) were translated accurately, but opaque, culture-specific, or specialized expressions—such as daughter board, son of a gun, بنت الشفة, ابن لبون, ابن جلا—were mistranslated. Students frequently produced literal translations, invented meanings, synonym substitutions, transliterations, or explanations in the same language, indicating limited semantic, cultural, and domain-specific knowledge.

The study on time metaphors (Al-Jarf, 2023) revealed that students had difficulty interpreting metaphors that conceptualize time through spatial, physical, or cultural imagery. Expressions such as time flies, the days devour each other, were often translated literally, resulting in semantically distorted equivalents. Students struggled to map conceptual metaphors across English and Arabic and frequently ignored the figurative dimension of time-related expressions.

The study on color-based metaphorical expressions showed that students misinterpreted color metaphors whose meanings differ a cross English and Arabic. While some color metaphors have shared meanings (e.g., white lie, قلبه أبيض), many do not. Students often translated color metaphors literally, producing incorrect equivalents for expressions such as green with envy, black humor, or اليد البيضاء. Their errors reflected limited cultural knowledge and insufficient exposure to metaphorical color systems in both languages.

The study on dar (house) vs. bayt (home) (Al-Jarf, 2022) demonstrated that students struggled with lexical items whose meanings shift depending on cultural, emotional, or contextual associations. Students frequently mistranslated dar and bayt into English as "house" or "home" interchangeably, failing to capture the cultural, emotional, or metaphorical nuances embedded in Arabic usage. Literal translation was dominant, and students rarely recognized when bayt functions metaphorically (e.g., بيت الشعر, بيت الحكمة).

The study on om (mother of) and abu (father of) expressions (Al-Jarf, 2017) revealed that students had difficulty interpreting metaphorical kinship expressions used to describe characteristics, professions, or symbolic attributes (e.g., أبو لهب, أم الخير, أبو العريف). Students often translated these expressions literally or substituted inappropriate equivalents, failing to recognize their metaphorical or cultural functions.

The study on numeral-based formulaic expressions (Al-Jarf, 2023) showed that students struggled with expressions whose numbers carry metaphorical or idiomatic meaning rather than literal quantity. While transparent expressions (e.g., once in a lifetime, ثلاثة على الطريق) were sometimes translated correctly, opaque or culturally marked ones (e.g., forty winks, سبع صنايع والبخت ضايع) were rendered word for word or incorrectly. Students failed to recognize that numbers in these expressions function as fixed idiomatic components, symbolic intensifiers or cultural markers.

Finally, the study on English–Arabic binomials (Al-Jarf, 2016) showed that students struggled with fixed paired expressions such as *pros and cons, bread and butter, or sooner or later*. Students frequently translated binomials word-for-word, reversed their order, or replaced them with unrelated expressions. Their errors reflected limited familiarity with fixed multi-word units and a tendency to treat binomials as compositional rather than formulaic.

Across all eight studies, several consistent themes emerge. Students struggle most with opaque metaphors, culture-bound expressions, fixed idioms, and formulaic expressions whose meanings cannot be deduced from individual lexical items. Literal word-for-word translation is the dominant strategy, and blank responses are common when students cannot access meaning. Errors arise from limited vocabulary, insufficient cultural knowledge, lack of exposure to idioms in both Arabic and English, and inadequate translation competence. Collectively, the studies highlight the cognitive and linguistic challenges posed by non-literal language and underscore the need for explicit instruction in metaphorical mapping, idiomaticity, cultural literacy, and the recognition of fixed expressions as holistic semantic units.

Cluster 2: Scientific and technical terminology

The single study in this cluster examined undergraduate student-translators' difficulties in translating English and Arabic common names of chemical compounds, a domain that requires both specialized scientific knowledge and linguistic competence. The findings reveal that students struggled extensively with this type of terminology, achieving fewer than 20% correct translations on the test and leaving 55% of the items blank. Their performance indicates not only limited familiarity with chemical nomenclature in English and Arabic but also a lack of awareness of the structural and semantic diversity of chemical common names. The corpus analysis of English and Arabic chemical common names showed that equivalents fall into a wide range of categories—including pure Arabic names, borrowings, Arabized forms, semi-borrowed forms, multiple equivalents, calques, neologisms, color-based names, eponyms, and old names—yet students were unable to recognize or reproduce these patterns in translation.

Students relied heavily on transliteration and literal translation, even when these strategies produced inaccurate or meaningless equivalents. Their errors reflected unfamiliarity with the domain: many students reported that they had never encountered most of the English or Arabic chemical common names before the test. This lack of exposure was evident in their inability to distinguish between technical terms and everyday common names, to identify when a term was a borrowing versus a calque, or to recognize when a chemical name had multiple Arabic equivalents depending on context. For example, compounds such as *calcium carbonate* may correspond to الحجر الجيري, الطباشير, or الرخام, yet students typically provided only one literal or transliterated form, often incorrect. Similarly, they failed to recognize that *soda water, soda lime, soda alum, and soda ash* represent different chemical substances despite sharing the lexical element "soda."

The structural analysis of Arabic chemical common names further highlighted the complexity of the domain: 74.5% of Arabic common names consisted of two-word compounds, 23.5% were single-word items, and 2% were three-word compounds. Students showed little awareness of these structural patterns, frequently mistranslating multi-word compounds by rendering only one constituent, reversing word order, or producing semantically incongruent combinations. Their errors also revealed difficulty distinguishing between borrowed, Arabized, and pure Arabic forms, as well as between old and modern nomenclature. For instance, they often failed to recognize that البوتاس is an Arabized borrowing, that الهيماتيت is a direct borrowing, or that حمض اللبنيك is a neologism.

Overall, the results demonstrate that students' difficulties stem from a combination of limited domain knowledge, restricted vocabulary, inadequate exposure to scientific terminology, and overreliance on literal translation strategies. Their inability to identify the correct equivalent among multiple possibilities, to recognize opaque or historical names, or to distinguish between technical and common names indicates that translating chemical terminology requires specialized training beyond general linguistic competence. The study underscores the need for explicit instruction in scientific nomenclature, contrastive terminology analysis, and strategies for handling opaque or unfamiliar technical terms in translation.

Cluster 3: Lexical and collocational errors

The four studies in this cluster reveal lexical and collocational difficulties among undergraduate student-translators, particularly in contexts where English and Arabic diverge in semantic range, collocational behavior, or lexical patterning. Across all studies, students relied heavily on literal word-for-word translation, surface-level analogies, and guesses, resulting in high rates of semantic distortion, faulty collocations, and context-inappropriate equivalents. These errors were especially saliant in the translation of polysemous words, neologisms, and multi-word lexical units, where meaning cannot be inferred from individual components alone.

The study on polysemes demonstrated that students struggled significantly more with Arabic→English translation than with English→Arabic translation, particularly when dealing with polysemous compounds whose meanings cannot be deduced from their constituent parts. For Arabic polysemes, students produced numerous faulty equivalents, with 76% mistranslating items such as التهابات المفاصل الروماتيزمية. They frequently translated compounds word-for-word, ignored fixed formulaic equivalents in English, and overgeneralized familiar meanings to unfamiliar contexts. For example, they translated بطاقة الأحوال literally as "conditions card" rather than "National ID Card," and rendered العبء التدريسي as "teaching burden" instead of "teaching load." Students also misinterpreted political, educational, and administrative terms, often due to confusion between American and British designations or between regional Arabic variants. Their errors reflected inadequate knowledge of domain-specific terminology, poor collocational awareness, and limited background knowledge. In English→Arabic translation, students similarly

overgeneralized familiar equivalents, translating system as نظامin all contexts, develop as يطوّرregardless of domain, and technical as تقنيeven when فنيwas required. They also failed to distinguish between noun and adjective forms (e.g., physical → فيزيائيin all contexts), misinterpreted grammatical structures, and mismatched parts of speech. Overall, 78% of polyseme errors stemmed from inadequate L1 competence, 32% from insufficient L2 proficiency, and 45% from inability to match equivalents to their correct domain.

The study on neologisms further highlighted students' limited lexical flexibility. Despite receiving instruction in English and Arabic word-formation processes, students struggled to recognize, interpret, or translate newly formed English words. They tended to translate neologisms literally, selecting the first familiar equivalent rather than using borrowing, paraphrase, or explanatory translation. Their difficulties stemmed from unfamiliarity with neologisms, limited background knowledge, and inability to infer meaning from context. Even when morphological cues were transparent, students failed to activate word-formation knowledge, indicating a gap between theoretical instruction and practical application.

The studies on collocations revealed similarly persistent weaknesses. In translating English word + preposition collocations, students frequently misselected prepositions, omitted required ones, or added unnecessary ones, depending on whether Arabic used a preposition in the equivalent structure. They mistranslated collocations such as depend on, interested in, apologize for, wait for, and lack something, often producing structurally or semantically incongruent equivalents. Their errors reflected insufficient knowledge of English prepositional patterns, limited awareness of Arabic collocational norms, and reliance on literal translation. In the study on word + particle collocations, students exhibited high rates of particle substitution, addition, and deletion, with substitution errors accounting for 84% of all particle-related errors. They frequently confused particles such as إلىand لـ, misused prepositions after adverbs of place, mishandled set prepositional expressions, and violated parallel structure. Many errors were intralingual (81%), arising from faulty common usage, ignorance of grammatical rules, or insertion of extraneous particles. Semantic and stylistic errors also emerged, such as mistranslating ثأر من الهزيمة, انظر إلى مقالة المنزل, or misusing اتجاهvs. نحو.

Across all four studies, a consistent pattern emerges: students lack the lexical depth, collocational competence, and contextual sensitivity required for accurate translation of polysemous words and phrases, neologisms, and collocations. Their errors stem from inadequate L1 and L2 lexical knowledge, insufficient exposure to domain-specific terminology, limited background knowledge, and overreliance on literal, word for word translation. These findings underscore the need for explicit instruction in collocational behavior, domain-specific vocabulary, semantic disambiguation, and the use of contextual clues to determine meaning. They also highlight the importance of teaching students to recognize fixed expressions, block equivalents, and formulaic language, rather than treating multi-word units as compositional structures.

Cluster 4: Grammatical and syntactic errors

The studies in this cluster reveal a consistent pattern of morphosyntactic difficulty among undergraduate student-translators working between English and Arabic. Across all three studies, students showed limited control over plural formation, grammatical agreement, and word order, with errors arising from structural interference, incomplete mastery of Arabic and English grammar and syntax, and inadequate comprehension of the source text. Together, these studies provide a detailed picture of the linguistic environments in which grammatical and syntactic errors occur and the cognitive and linguistic processes that underlie them.

The study on English and Arabic plurals showed that students performed well only when plural structures in the two languages aligned directly. When the mapping between English and Arabic plurals diverged, accuracy declined sharply. Students struggled with Arabic plurals that correspond to singular nouns in English (e.g., مجوهرات→ jewellery), Arabic dual forms with distinct singular stems (e.g., الرافدان), and nouns with multiple plural forms such as plurals of paucity and plurals of multiplicity. They also had difficulty distinguishing between English nouns with identical singular and plural forms (series, species), foreign plurals (indices, larvae, oases), and nouns whose pluralization depends on part of speech (rich/riches, wood/woods). Error analysis showed that students made more errors when translating Arabic plurals into English than vice versa, and that morphological challenges dominated in Arabic→English translation, whereas semantic confusion was more common in English→Arabic translation. Literal translation was the most frequent strategy, and when students could not access meaning, they resorted to phonologically similar equivalents, paraphrases, explanations, or unrelated lexical items. The findings indicate that students transfer plural morphology bidirectionally, applying Arabic pluralization rules to English and English rules to Arabic, reflecting a reliance on surface forms rather than semantic or syntactic cues.

The study on grammatical agreement errors further highlights students' limited control over core morphosyntactic features. Analysis of 159 agreement errors from senior translation students showed that mismatches in gender and number were pervasive, with gender errors outnumbering number errors. Students produced more disagreeing verbs than pronouns or adjectives, and interlingual errors were more common than intralingual ones. Many errors stemmed from incorrect gender assignment, inability to determine the number of the controller, or failure to associate verbs, pronouns, and adjectives with their correct referents. Agreement errors were particularly frequent when the controller was feminine, non-human plural, or embedded in a complex noun

phrase. These patterns suggest that students lacked a stable internalized system for Arabic agreement rules and often relied on English structures, leading to mismatches in inflection and referential alignment.

In the study on SVO word order errors in English–Arabic translation, students overwhelmingly calqued the English SVO structure into Arabic, producing 55% deviant SVO sentences on a translation test, despite the fact that all source texts required VSO structures in Arabic. Analysis of 472 deviant SVO structures from student translation projects revealed that students consistently imposed English word order on Arabic clauses, even when doing so violated syntactic, pragmatic, or discoursal constraints. Errors occurred in a wide range of syntactic environments, including sentences with long or complex noun phrases, clauses containing relative pronouns, passive constructions, compound and complex sentences, conditional clauses, and structures following particles such as أنّ, إنّ, لكن, and عندما. Students frequently added particles such as أما, إنّ, قد, and فـ to justify an SVO structure, even when these particles were pragmatically or grammatically inappropriate. They also used avoidance strategies such as replacing verbs with verbal nouns, deleting lexical verbs, or inserting redundant subject pronouns. These patterns indicate that students lacked awareness of the pragmatic and discoursal conditions that govern word order in Arabic, including theme–rheme organization, information structure, and the communicative function of VSO constructions. Many errors also stemmed from inadequate comprehension of the source text, especially when processing embedded clauses, reduced relative clauses, or semantically dense passages.

Taken together, the studies in this cluster demonstrate that grammatical and syntactic errors in student translation arise from a combination of structural interference from English, insufficient mastery of Arabic morphosyntax, and limited ability to analyze complex source-text structures. Students rely heavily on literal translation and surface-level imitation, often at the expense of grammatical accuracy, semantic clarity, and discourse coherence. These findings underscore the need for explicit instruction in Arabic grammatical rules, contrastive analysis of English–Arabic structures, and training in discourse-level translation strategies that move beyond word-for-word rendering.

Cluster 5: Human vs AI comparative studies

The two studies in this cluster provide a comparative analysis of human and AI performance in translating culturally loaded expressions and scientific terminology. Together, they reveal clear patterns in accuracy, strategy use, and error types across both domains. In the study on Arabic expressions of impossibility (EIs), Microsoft Copilot (MC) consistently outperformed undergraduate student-translators. Students produced fewer than 35% correct translations, whereas MC achieved 52% accuracy. Students also left a substantial number of items blank, while MC generated a translation for every expression. Both MC and the students performed better in Arabic–English translation than in English–Arabic translation, suggesting that rendering Arabic idiomatic structures into English is more straightforward than retrieving culturally appropriate Arabic equivalents. Expressions that had transparent or shared metaphorical structures across the two languages were translated more accurately, whereas opaque idioms such as near the knuckle, ghost of a chance, and dance on a land mine posed significant challenges for both groups.

Qualitatively, MC's translations were characterized by a strong tendency toward literal word-for-word rendering, which often resulted in culturally awkward or semantically distorted output. For example, MC translated once in a blue moon as مرة واحدة في القمر الأزرق, a literal but culturally meaningless phrase in Arabic. Although MC occasionally provided explanations of idiomatic meaning, it struggled to achieve conceptual alignment because its translation models prioritize surface linguistic accuracy over culturally adapted phrasing. Students also relied heavily on literal translation, but unlike MC, they frequently resorted to paraphrase, partial translation, or extraneous additions when they were unable to retrieve an equivalent. Their errors stemmed from limited exposure to English idioms and proverbs, unfamiliar vocabulary, insufficient background knowledge, and underdeveloped translation competence. The contrast between the two groups highlights that while AI is more consistent and comprehensive in coverage, students demonstrate greater flexibility but far less accuracy.

The second study, which examined the translation of English and Arabic common names of chemical compounds, further illustrates the performance gap between human and AI translators. In the earlier human-only study, students produced fewer than 20% correct translations and left 55% of the items blank, citing unfamiliarity with both English and Arabic chemical terminology. In contrast, MC achieved 72% accuracy when translating the same set of chemical compound names. MC produced more correct equivalents in Arabic–English (40%) than in English–Arabic (32%), and its accuracy improved when the domain was explicitly specified or when it was prompted to provide all known equivalents. MC's output included literal translations, transliteration, faulty derivatives, and occasional explanations. Although MC possesses broad knowledge of chemical terminology, it sometimes failed to match English terms with their correct Arabic equivalents unless guided by contextual cues or explicit instructions.

Across both studies, AI demonstrated clear strengths in accuracy, coverage, and terminological recall, while students showed higher omission rates and greater difficulty with opaque idioms and specialized terminology. Students occasionally produced culturally appropriate responses when they recognized the expression, but their performance was inconsistent and heavily dependent on prior knowledge. AI, on the other hand, was more reliable with technical terminology but struggled with

metaphorical and culturally bound expressions due to its default word-for-word translation and lack of conceptual mapping. Both groups performed better in Arabic–English translation, and both relied heavily on literal translation as their primary strategy, though students supplemented this with paraphrasing and partial translation when necessary.

Overall, this cluster reveals complementary strengths and weaknesses between human and AI translation. AI excels in breadth of knowledge, consistency, and technical terminology, while students retain an advantage in cultural intuition—though only when they are familiar with the expression. The findings underscore the need for translation pedagogy that integrates AI literacy with explicit instruction in idiomatic, metaphorical, and culturally specific language, enabling students to leverage AI effectively while developing the cultural and linguistic competence that AI currently lacks.

4. Discussion

4.1 *Meta-Synthesis and Interpretation*

Across the 19 studies synthesized in this SR, a clear and consistent pattern emerges regarding the types of linguistic structures that challenge student-translators. Whether dealing with expressions of impossibility, *om* and *abu* expressions, *ibn* and *bint* expressions, *dar* (house) and *bayt* (home), numeral-based expressions, time metaphors, color-based metaphors, binomials, polysemes, neologisms, scientific and technical terminology, plurals, SVO structures, grammatical agreement, or collocations, the findings converge on a stable set of recurring error types. These include literal translation, partial translation, paraphrase, transliteration of Arabic words when English equivalents are inaccessible, extraneous or invented equivalents, substitution by synonyms, and avoidance (blank responses). Most importantly, these strategies appear across all linguistic domains, regardless of whether the expression is idiomatic, metaphorical, technical, or structural.

The synthesized findings confirm that translation accuracy remains low, with substantial variability across expression types and linguistic categories. However, the inaccuracies observed are not random. Rather, they are structurally patterned and linguistically predictable. The recurrence of similar error types across independent datasets suggests that English–Arabic and Arabic–English translation performance is shaped by deeper and more systemic deficiencies in the students' semantic, lexical, syntactic, and cultural competence. The consistency of these patterns across a twenty-five-year body of research strengthens the reliability of the conclusions and provides the first evidence-based performance map of translation behavior in contemporary Arabic contexts.

This meta-conclusion highlights the need for clearer translation guidelines, enhanced lexical and semantic knowledge, improved cross-linguistic comparison of metaphorical and idiomatic expressions, and stronger inferencing skills. It also highlights the importance of viewing translation not as a word-for-word transfer, but as a complex linguistic, cultural, and cognitive practice requiring systematic analysis and informed decision-making. By offering the first comprehensive synthesis of English–Arabic and Arabic–English translation errors, this SR establishes a foundational platform for future research on translation accuracy, translator competence, and cross-linguistic behavior.

Finally, the corpus' internal consistency, generated by a single researcher using stable datasets over a twenty-five-year period, allows for a uniquely controlled interpretation of students' translation behavior. The stability of the findings across contexts, modalities, and years suggests that the observed patterns are robust and generalizable within contemporary Arabic linguistic environments. This meta-interpretation positions students' translation not only as a technical conversion process but also as a linguistic, cultural, and cognitive practice that reflects broader dynamics of semantic, lexical, syntactic and cultural knowledge.

4.2 Cross-Cutting Insights: Difficulty Gradient Across Linguistic Structures

The most difficult structures that consistently produced the lowest accuracy, highest avoidance, and most extraneous/literal translations across all studies are follows:

- ***Opaque metaphorical expressions*** as Expressions of impossibility (e.g., ghost of a chance, near the knuckle, dance on a land mine); Arabic opaque idioms (e.g., لما تشوف حلمة ودنك, حتى يلج الجمل في سم الخياط); Time metaphors (time devours, يموت النهار); Color metaphors with culture-specific meanings (green with envy, black humor, اليد البيضاء). These structures are difficult because they require cultural knowledge, metaphorical mapping, and non-literal interpretation.
- ***Ibn/bint expressions (kinship metaphors)*** as culture-specific (بنت الشفة, ابن لبون, ابن جلا), Specialized (daughter board, daughter isotope), Figurative kinship (son of a gun, daughter of Eve). These are difficult because they require cultural, historical, or domain-specific knowledge; meanings cannot be inferred from components.
- ***Polysemes (one-to-many equivalents)*** such as system, develop, affairs, resources, physical, administrative and Arabic polysemes with multiple domain-specific equivalents (أحوال, عبء, إرشاد). These are difficult because the students cannot match the correct equivalent to the correct domain; high semantic ambiguity.
- ***Scientific and technical terminology (common names of chemical compounds*)** such as Epsom salt, milk of magnesia, aqua regia, saltpetre and Arabic opaque names (الملح الإنجليزي, ماء النار, الزنجار الفرنسي). These are difficult because they are opaque, historical, or borrowed names; students unfamiliar with both English and Arabic forms.

- ***SVO/VSO word order in complex sentences*** such as sentences with long NPs, embedded clauses, passives, conjunctions, أنّ, عندما, conditional clauses and students calqued English SVO into Arabic even when ungrammatical. These structures are difficult because they require syntactic awareness, discourse analysis, and rule-based decision making.
- **Grammatical agreement (gender, number, non-human plurals)** such as gender assignment errors, non-human plural agreement and pronoun–antecedent mismatches. These are difficult because Arabic agreement rules are complex and differ sharply from English.

Secondly, structures that are moderately difficult (with mixed performance) show **some correct responses**, but error rates remain substantial as in the following:

- ***Binomials (fixed paired expressions)*** as Pros and cons, bread and butter, sooner or later, Arabic binomials with fixed order (طول وعرض, ليل ونهار). These are moderately difficult because students often translate literally or reverse order, but some binomials have transparent meanings.
- ***Numeral-Based Expressions*** as forty winks, once in a blue moon, سبع صنايع والبخت ضايع and transparent ones easier (once in a lifetime). They are moderately difficult because numbers carry symbolic meaning; some are transparent, others opaque.
- ***Om/abu expressions*** as أبو العريف, أم الخير, أبو لهب. Students often literalize but sometimes infer meaning. These are moderately difficult because they require cultural knowledge but some meanings are inferable from context.
- ***Neologisms*:** Students struggle with unfamiliar forms but can sometimes infer meaning from morphology. Here Inference possible but inconsistent.
- ***Collocations (word + preposition / word + particle)*** depend on, interested in, lack something → يفتقر إلى. The students confused between إلى and لـ, misuse after adverbs of place. Some collocations match across languages; others diverge sharply.

Thirdly, easier structures (highest accuracy) which consistently produced higher correct response rates as in the following:

- ***Expressions shared across English and Arabic*** as a needle in a haystack → إبرة في كومة قش, cry over spilt milk → يبكي على اللبن المسكوب, castles in the air → قصور في الهواء. Such expressions have direct equivalence; transparent metaphor.
- ***Transparent ibn/bint expressions*** as like mother like daughter → البنت على أمها and step-daughter → بنت بالتبني. These are easy because they have shared conceptual structure across languages.
- ***Transparent color expressions*** as white heart → قلبه أبيض and black day → يوم أسود. These are easier because they shared metaphorical mapping.
- ***Simple plurals (where English and Arabic match*)** as Regular plurals and Arabic plurals with direct English equivalents. These are easier because morphological alignment reduces cognitive load.
- ***Simple SVO/VSO sentences without embedding*.** These are short sentences with no relative clauses or conjunctions. They are easier because students can rely on basic syntactic knowledge.

4.3 *Implications*

The findings of this SR carry significant implications for translation pedagogy, curriculum development, and the broader understanding of translator competence in Arabic–English and English–Arabic contexts. The consistent recurrence of literal translation, avoidance, synonym substitution, paraphrase, transliteration, and extraneous equivalents across 19 independent studies indicates that student-translators are not merely struggling with isolated structures, but with deeper, systemic gaps in linguistic, semantic, and cultural knowledge. These patterns suggest that translation difficulties are rooted in foundational weaknesses rather than task-specific challenges.

First, the results highlight the urgent need to strengthen lexical depth and semantic precision in both Arabic and English. Students' inability to select appropriate equivalents for polysemes, technical terms, and culturally bound expressions demonstrates that vocabulary instruction must move beyond memorization toward richer semantic networks, domain-specific usage, and contextualized meaning. Translation programs should incorporate explicit training in lexical ambiguity, domain-restricted terminology, and the semantic range of high-frequency polysemous items.

Second, the findings em[hasize the importance of cultural competence as an integral part of translator training. Students' difficulties with idioms, metaphors, kinship expressions, color metaphors, and numeral-based expressions reveal that translation is

inseparable from cultural literacy. Curricula should therefore include systematic exposure to culturally embedded expressions in English and Arabic, along with instruction in metaphorical and figurative meaning, and cross-cultural pragmatics.

Third, the heavy reliance on literal translation across all linguistic domains suggests that students lack inferencing skills and strategic decision-making. Translation instruction must explicitly teach students how to analyze context, identify fixed expressions, recognize non-literal meaning, and select appropriate translation strategies. This includes training in recognizing when literal translation is inappropriate and how to shift to modulation, idiomatic equivalents, paraphrase, or culturally adapted expressions.

Fourth, the findings point to the need for greater emphasis on contrastive linguistic analysis. Students frequently failed to distinguish between structures that align across languages and those that diverge sharply, such as SVO/VSO word order, grammatical agreement, collocations, and kinship metaphors. Integrating contrastive analysis into translation courses can help students anticipate areas of divergence and avoid predictable errors.

Fifth, the high rates of avoidance and blank responses across studies indicate that students may lack confidence, metacognitive awareness, or strategies for dealing with unfamiliar expressions. Translation pedagogy should therefore incorporate metacognitive training, including think-aloud protocols, reflective practice, and guided error analysis to help students monitor their comprehension and decision-making processes.

Finally, the consistency of error patterns across a twenty-five-year research period suggests that translation programs may be relying on instructional approaches that do not adequately address the cognitive and linguistic demands of translation. The findings call for a re-evaluation of curriculum design, with greater integration of authentic texts, corpus-based learning, exposure to diverse genres, and scaffolded practice with non-literal and culturally bound expressions.

Taken together, these implications emphasize that translation competence is multidimensional, requiring linguistic knowledge, cultural awareness, strategic reasoning, and metacognitive control. Addressing these dimensions holistically can enhance students' accuracy, confidence, and overall performance in English–Arabic and Arabic–English translation.

4.4 *Future Research Directions*

Future research should build on the findings of this review by addressing several persistent gaps in the study of English–Arabic translation errors among student translators. There is a clear need for more methodologically comparable studies that employ shared taxonomies of error types, standardized assessment criteria, and transparent coding procedures to enable cross-study synthesis. Longitudinal research is also needed to track how students' error patterns evolve over time and how linguistic, cognitive, and pedagogical factors interact in shaping translation performance. In addition, future studies should incorporate larger and more diverse student populations across institutions and proficiency levels, as well as experimental designs that isolate the effects of specific linguistic structures or instructional interventions. Expanding research to include multimodal data—such as think-aloud protocols, keystroke logging, and eye-tracking—would further deepen our understanding of the cognitive processes underlying students' translation errors. Collectively, such work will strengthen the empirical foundation of translator education and support the development of more targeted, evidence-based pedagogical practices.

5. Recommendations

The findings of this SR point to the need for a comprehensive rethinking of how English–Arabic and Arabic–English translation is taught, practiced, and assessed. The recurring error patterns across metaphorical, lexical, syntactic, and technical domains suggest that translation competence must be developed through targeted, systematic, and evidence-based instructional approaches. Therefore, this study recommends the following:

- Translation programs should prioritize the development of deep lexical knowledge in both languages. Instruction must move beyond surface-level vocabulary lists toward: semantic networks and word families, domain-specific terminology (legal, medical, scientific, cultural), polysemy training, including one-to-many and many-to-one mappings, contextualized vocabulary learning rather than isolated word memorization. Students should be trained to identify semantic shades of meaning and select equivalents appropriate to domain, register, and context.

- Given the high difficulty of idioms, metaphors, kinship expressions, color symbolism, numeral-based expressions, and culturally embedded phrases, translation pedagogy should include: explicit teaching of metaphorical mapping across languages, contrastive analysis of figurative systems in Arabic and English, exposure to authentic idiomatic expressions in diverse genres, and practice in identifying fixed expressions and avoiding literal translation. Students should learn to treat idioms and metaphors as holistic units rather than compositional structures.

- The dominance of literal translation and avoidance indicates weak inferencing abilities. Instruction should incorporate guided practice in using contextual clues, exercises in meaning prediction and hypothesis testing, think-aloud protocols

to model expert decision-making, tasks requiring students to justify translation choices. These strategies help students shift from word-level processing to meaning-level interpretation.

- Students frequently misinterpreted structures that diverge between Arabic and English, including SVO/VSO order, agreement rules, collocations, and kinship metaphors. Translation courses should integrate: systematic comparison of Arabic and English grammatical systems, contrastive analysis of collocations, prepositions, and particles, explicit instruction on structures that do not align across languages. This approach helps students anticipate predictable error zones.

- Students' unfamiliarity with technical terminology, scientific common names, and specialized expressions suggests limited exposure to real-world texts. Programs should incorporate authentic materials from science, media, law, business, and literature, corpus-based translation tasks, genre-specific translation practice, assignments requiring research into domain-specific terminology. Authentic exposure builds background knowledge and reduces reliance on literal translation.

- The high rates of avoidance and blank responses indicate low confidence and limited self-monitoring. Translation instruction should include reflective journals, error-analysis workshops, peer-review sessions, and metacognitive strategy training. These practices help students become aware of their decision-making processes and develop self-regulation.

- Assessment should evaluate not only accuracy but also: strategy use, justification of choices, ability to identify idioms and fixed expressions, and recognition of domain-specific equivalents. Rubrics should reward appropriate strategy selection, not just literal correctness.

Finally, the consistency of error patterns across 25 years of research suggests that traditional teaching methods are insufficient. Translation programs should redesign curricula based on empirical evidence, integrate findings from SRs into course planning, adopt iterative, data-driven improvements, and encourage collaboration between linguists, translators, and educators. A research-informed curriculum ensures that instruction targets the most persistent areas of difficulty.

6. Conclusion

This SR study provides the first comprehensive synthesis of English–Arabic and Arabic–English translation errors produced by student-translators across nineteen empirical studies spanning more than two and a half decades. Despite the diversity of linguistic domains examined, ranging from metaphorical and culturally bound expressions to syntactic structures, polysemes, neologisms, scientific terminology, plurals, collocations, and word order, the findings converge on a stable pattern of performance. Students consistently relied on literal translation, partial translation, paraphrase, substitution by synonyms, transliteration, extraneous equivalents, and avoidance, regardless of the linguistic structure or genre. These strategies reflect deeper gaps in lexical knowledge, semantic precision, grammatical and syntactic proficiency, cultural competence, inferencing skills, and contrastive linguistic awareness.

This SR demonstrates that translation inaccuracies are not isolated or idiosyncratic; they are systematic, predictable, and rooted in foundational linguistic and cognitive challenges. Opaque metaphors, culture-specific idioms, kinship expressions, polysemes, and technical terminology emerged as the most difficult structures, while transparent expressions shared across both languages were translated with higher accuracy. These patterns highlight the multidimensional nature of translation competence and the need for pedagogical approaches that integrate linguistic, cultural, strategic, and metacognitive dimensions.

By consolidating findings from nineteen independent studies, this review establishes an evidence-based performance map of translation behavior in contemporary Arabic contexts. It underscores the need for curriculum reform, targeted instruction, and research-informed teaching practices that address persistent areas of difficulty. The review also identifies gaps in the literature, including the scarcity of studies on certain linguistic domains, the limited use of authentic texts, and the need for more rigorous methodological designs.

Ultimately, this SR lays the groundwork for a more coherent, data-driven understanding of translation competence among student-translators. It provides a foundation for future research, informs pedagogical innovation, and contributes to the development of more effective translation training programs in the Arabic-speaking world.

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