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ARTIFICIAL INTELLIGENCE IN TRANSLATION AND TRANSLATOR TRAINING: CHALLENGES, THREATS, LIMITATIONS

UMELÁ INTELIGENCIA V PREKLADE A VZDELÁVANÍ PREKLADATEĽOV: VÝZVY, HROZBY, OBMEDZENIA

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Abstract

The development of artificial intelligence (AI), especially large language models, is transforming the language industry and creating new challenges for translator education. This paper examines how recent advances in natural language processing are reshaping translation practice and the training of future translators. Its main aim is to analyse the implications for translator training, with particular attention to the extent to which Artificial Intelligence can and should be integrated into training. The paper also examines how translators' competence profiles are evolving as AI becomes part of their everyday professional environment. In response to these developments, the study explores possible pedagogical concepts and didactic scenarios in which AI may either replace selected traditional tools or serve as a methodological extension of them. The paper argues that, rather than eliminating the need for human translators, AI requires a redefinition of translator training as "human-in-the-loop" that places greater emphasis on critical thinking, evaluation, process management, and responsible use of technology.

Keywords

artificial intelligence, translation, translator training, human-in-the-loop, language industry

Introduction

The rapid spread of artificial intelligence (AI), neural machine translation (NMT), and, more recently, large language models (LLMs) has intensified long-standing debates about the future of translation as a profession and as a field of university training. While translation has been shaped by automation and digital tools, the current wave of AI differs in scale, accessibility, and discursive impact. AI systems are now used not only by trained language professionals but also by clients, institutions, and non-specialist users, which changes both expectations of translation and the conditions under which translators work. Recent industry evidence in ELIS' survey (European Language Industry Survey) confirms that AI is now shaping major trends in the language sector, including rising price pressure, changes in outsourcing, greater use of post-editing, and uncertainty about new AI-specific roles. At the same time, AI adoption is uneven, and its effects differ across language companies, independent language-service providers, language departments, and universities (ELIS 2025).

These developments raise a central pedagogical question: What kind of competence should translator education develop in an environment where linguistic production is increasingly automated, but where professional responsibility, contextual judgement, and quality assurance remain human obligations? The updated EMT Competence Framework (EMT, 2022) is particularly relevant here because it explicitly treats translation as a process designed to meet institutional needs and argues that translator education must equip students not only with knowledge but also with the ability to perform translation services in accordance with professional and ethical standards. Importantly, this framework presents competence areas as complementary rather than as isolated, providing a baseline for reconsidering translator competence in the digital age. While the framework helpfully views competence areas as integrated components, it fails to account for AI tool proficiency—a critical factor for remaining competitive within the evolving language industry.

1 Translation industry vs translator training

The translation industry has been heavily influenced by the introduction of IT-based artificial intelligence tools (Massey, 2024), which have changed skill sets and roles, and introduced emerging profiles that have not yet been

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fully reflected in translator training. Neural machine translation (NMT), which debuted in 2016, is now used by both laypeople and language service providers and their customers. The experience and expertise we have gained give us unique insight into the quality and reliability of "machine translation" and raise awareness of the limitations of the uncontrolled use of machine translation. However, information and communication technologies have increased demand for translation services, and volumes are steadily growing (ELIS surveys, 2021-2025). Since 2023, large language models (LLMs) have come to the fore, raising numerous questions and controversies among experts. LLMs are neural-network-based language models trained on large amounts of text using machine learning algorithms. This involves natural language processing, which, in simple terms, is the ability of a computer program to identify spoken and written language (Shahzad, 2025). Artificial intelligence is thus used in the language industry for data processing, e.g.

- Summarisation: Creation of summaries of text passages.

- Tagging, which can be used to assign a label to each token in the document based on its part of speech.

- Text categorisation, which involves analysing text documents and classifying them based on predefined topics or categories.

- Sentiment analysis identifies positive or negative sentiments from internal or external data sources. It is often used to provide information about brands, products, or services.

- Named entity recognition: it categorises entities in text, such as names or places; e.g., California (place), Maria (name).

- Creation of new content, etc.

Lynn Bowker (2024) has elaborated that the possibilities offered by artificial intelligence are not only used in translation projects, but can also be helpful in other areas for target groups such as:

- editors
- marketing specialists
- authors
- scientists, researchers
- lawyers
- teachers.

As evidenced by research across fields beyond translation studies, Artificial Intelligence (AI) enables faster and more efficient information exchange between individuals and teams, improving collaboration and reducing the risk of misunderstandings (Woolley, 2025, 2). At the same time, it creates space for new specialisations, enabling experts to focus on specific areas and to offer more informed technical solutions. It facilitates the networking of people and organisations, thereby promoting the emergence of global communities and partnerships that exchange knowledge and experience. It facilitates the networking of people and organisations, thereby promoting the emergence of global communities and partnerships that exchange knowledge and experience. Apparently, working with AI could stimulate creativity and generate new approaches to problems that would otherwise have gone unnoticed. With AI, routine tasks can be automated, freeing time for higher-value tasks. The development of AI is creating new professions and job tasks, thereby expanding employment opportunities for a wide range of people. AI opens the door to previously unexplored areas of science and technology, creating opportunities to discover and develop innovations with global impact. A variety of new jobs can be created by AI, including digital marketing specialists, language content creators, cultural mediators, product localizers, transcreators, audio and video content creators, testers, and consultants (Štefčík, J. 2025, 221). However, based on day-to-day user experience, we may claim that generative AI is not the perfect solution for every type of project, as it processes large amounts of data, which limits its ability to capture specific knowledge and diverse styles, and contexts. Ultimately, large deviations in the training data can lead to misunderstandings and communication problems due to incorrect or distorted responses, as the scope and quality of the data depend on the number of examples sufficient for the algorithms used to create language models.

1.1 Artificial intelligence - reshaping translator training

Challenges in AI are reconfiguring the relationship between cognitive skills and social-professional practice. This concept, as experimented with by Hirvonen (2025), aligns with the hypothesis that process-based skills, developed

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through interactive cognition, are socially shared and should be treated as the pedagogical core that integrates these two dimensions.

The dynamic integration of AI into translation practice is reshaping both the cognitive and social dimensions of the profession. On the cognitive level, AI tools transform the demands placed on translators and translation students by shifting emphasis from text production to higher-order skills such as critical assessment, decision-making, and strategic intervention. Instead of focusing primarily on generating target texts, translators increasingly evaluate machine-generated output, monitor errors, and manage information flows. At the same time, AI is reconfiguring the social organisation of translation work. Collaboration patterns are evolving as human translators work alongside automated systems, negotiate shared tasks within teams, and take on new functions such as post-editing, quality assurance, and workflow coordination. These profound changes call for an equally profound response in translator education. The constructivist approach in pedagogy, as a strategy (Esfandiari - Ebrahim, 2026), offers a way forward by linking critical thinking, evaluation literacy, teamwork, and project management. By fostering reflective practice and collaborative problem-solving, translator training can prepare students not only to work competently with AI tools but also to understand and shape the broader professional ecosystems in which these tools operate.

Drawing on both cognitive and social perspectives, translation is not seen as an isolated "black box" of individual mental processes, but as a situated, context-dependent activity. Translators' attention, memory practices, decision-making, and problem-solving unfold within specific cultural settings and institutional expectations.

The impact of AI on translator training cannot be adequately understood if framed only as a technical issue. It must also be theorised as a cognitive and social issue, as Djovčoš claims (Djovčoš, 2026, 166). Based on this presumption, cognition can be frequently distributed, meaning that expertise emerges not only from what happens "in the head," but also from interaction with tools (e.g., search and translation engines, translation memories, datasets, AI-assisted systems, etc.). On the one hand, translation remains a cognitively demanding activity involving comprehension, problem identification, attention management, decision-making, revision, and evaluation. Cognitive approaches to translation process research continue to stress that translation involves complex mental operations rather than simple linguistic substitution. On the other hand, translation is also socially situated: it is embedded in workflows, institutions, technologies, professional norms, role distributions, and interactions with clients, revisers, terminologists, and other stakeholders. Recent work on shared cognition in translation further shows that meaning production and problem-solving may emerge through interactive, collaborative processes rather than through isolated individual action. (Sun et al., 2025)

This cognitive–social duality is especially important in AI-rich environments. Generative AI may accelerate drafting, reformulation, terminology exploration, and quality control, but it also redistributes effort across the translation process. Instead of eliminating human expertise, it often shifts the translator's work toward monitoring, evaluating, prompting, comparing outputs, post-editing, documenting decisions, coordinating with others, and managing risk. Recent scholarship on translator competence in the age of AI similarly points to the growing importance of strategic or methodological competence (Prieto, 2024, 153), especially in relation to tool assessment, quality control, and the integration of revision and post-editing into professional workflows. Newer work on human–AI collaboration in translation education also suggests that translator training should address not only student skills but also collaborative classroom design, industry expectations, and iterative pedagogical development. A new concept, the human-in-the-loop (HITL), has been introduced as a term in IT research (Cheruvu, 2026). In communication-focused academic writing, HITL is presented as an approach that integrates human judgment with AI and machine learning to enhance accuracy, reduce bias, and better interpret complex contexts—especially as automated systems increasingly shape content analysis, translation, and decision-making.

In this context, process-based skills function as the integration mechanism between the cognitive and social dimensions of translator education. In cognitive terms, process-based skills organise the translator's mental work: they structure how students analyse briefs, identify problems, select strategies, evaluate AI-generated outputs, revise drafts, and justify decisions. In social terms, the same skills organise participation in professional practice: they enable students to coordinate roles, negotiate quality expectations, manage workflows, communicate with clients and peers, document intervention points, and assume ethical responsibility for final outputs. Process-based skills, therefore, connect what happens inside the translator's activity system with what happens between participants in the broader translation network. This claim extends the logic already present in current competence frameworks and aligns with recent findings (Djovčoš, 2026; Ren, Wang, 2025) that collaborative competence, classroom design, and workflow awareness are becoming central in AI-mediated translation education.

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1.2 Shifts in training and education as outcomes

A lack of concepts, for example, can lead to incorrect instructions when the AI model can only generate a quote based on the available training data. One solution is to fine-tune the model for the subject area, but this might entail high costs or increased specialist capacity. Targeted training in critical thinking and project-based teamwork, therefore, remains a major challenge. What does this involve?

First, prospective translators or students must be made aware that "artificial intelligence" is neither intelligent nor capable of thinking. Unlike humans, algorithms cannot understand, ask questions, or take context into account. However, this is precisely what is essential in translation and interpreting. For an AI system to create content in another language, whether written or spoken, it draws on what it has "learned" from a very large amount of data after being trained by specialists or users of free applications.

Generative AI tools are software programs for statistical estimation. They are fascinating because of their high speed and the naturalness of their responses, which, at the same time, provokes controversy about their quality. Upon closer inspection, however, a native speaker or experienced expert will quickly notice inaccuracies, semantic changes, even controversial responses, omissions, or redundancies in the generated content. A more serious problem, however, is that generative artificial intelligence produces partially or false information and presents it as true (hallucinations). Professional translators have the experience that machine translations in their current form are unusable without post-editing. For this reason, their developers and clients, including large translation agencies, hire professionals with editorial skills. In the translation industry, post-editing is becoming an integral part of a translator's job profile. Nevertheless, according to the ELIS survey, which states that the overall opinion that freelancing is a viable long-term option has dropped below the 50% mark (ELIS 2025), translators view post-editing (and, by extension, artificial intelligence) as a threat to their work. Interpreters also regard competition from artificial intelligence as their primary concern, even though interpreting is a highly specialised area of multilingual transfer that relies most heavily on a real (human) interpreter.

2 Language industry and translator training

According to the Nimdzi report (2025), market demand is changing, as evidenced by the introduction of new, insufficiently tested, and unproven platforms (especially free ones). Today, applications such as ChatGPT are readily accessible to individuals and companies that lack the skills necessary to manage the translation process, as they are not trained in the nuances of working with artificial intelligence. The ill-considered use of these tools in translation could, in theory, lead either to the complete disappearance of linguists' and translators' expertise in languages and intercultural communication or to an uncontrolled flood of translations for post-editing. Professional expertise should be incorporated into the entire translation process. This may be the reason why the legal and labour conditions for language service providers may theoretically deteriorate with the use of automated tools. Because of a lack of control or transparency, machine translation is presented as an improved form of human translation, even though its process, control, and editing do not require the same amount of time or yield the same final product. To achieve professional quality, post-editing is often more time-consuming than standard translation. However, post-editing has also been perceived as monotonous and non-intellectually stimulating, yet it requires greater attention to detect errors that a human translator might miss (Guerberof, 2013, 77).

Post-editing is also undervalued financially due to unrealistic expectations among language service customers regarding productivity and results (FIT 2017). Technological optimism is further fuelled by the need to recoup the high investments in introducing new tools with integrated artificial intelligence. Under these circumstances, machine-generated texts are struggling to achieve a professional level of quality. According to the Position Paper issued by the Steering Committee of the Société française des traducteurs (2024), human translators in the role of post-editors are less efficient and creative than when working on standard translations without pre-generated text. The paper also states that, due to time pressure and the strong influence of machine translation's wording, human expertise must be maintained in the translation process.

2.1 Perspectives

Based on several resources, we may claim that if generative artificial intelligence (AI) is viewed as a tool to assist people, it should not replace experts and should always be used with due care (EU Translation Centre guidance, 2024; EU DG Interpretation, 2025; ISO guidance on use of AI, 2025.

Content created by humans must not be confused with the chance to get "free data." Before AI platforms are used, their potential and limitations, as well as the protection of personal data, must be systematically assessed and reviewed. In supporting the activities of professional associations and commercial companies, it is necessary to recognise and protect the status of authors of all creators, including translators and interpreters, to preserve their

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copyright, professional, and economic rights. Language experts should not be replaced by artificial intelligence (ibid 2024). Recent studies indicate numerous errors and inaccuracies that it can introduce. With the self-sustaining system of online publication, we risk losing rare words and terms, thereby impoverishing the language. Furthermore, AI training data prevails in English. Despite a request for translation into another language, the source text is often translated into English and then into the target language. This system favours English over other languages (ibid 2024).

3 Changes in the educational approach

Replacing human expertise with automatic generators in content creation can raise questions about the expertise and appeal of the translation profession.

Specialised academic programs face many questions about recruiting students who choose to pursue multi-year degrees, given the limited career opportunities. This often leads them to increasingly perform undervalued and unskilled work. Under the threat of artificial intelligence, experienced translators and interpreters could find themselves out of work in the long term. The question remains: to what extent is society prepared to assume financial responsibility for the massive retraining of tens of thousands of professionals with appropriate qualifications? Is it really prepared to dispense with their skills and stand idly by as an old profession, which is an indispensable vehicle for global communication and cooperation, disappears into oblivion? This is precisely why language, as an expression of human thought, poses a major challenge for the development of AI. Automated language production has a significant impact on creativity and critical thinking, exposing our society to the risk of standardisation, disinformation, and even manipulation.

Educators, lecturers, teachers, curriculum developers, and educational institutions, therefore, face a major challenge: to focus on what AI cannot solve, or can only solve to a limited extent. It is necessary to view AI solely as a partner that bears no legal responsibility for the end products. Then, to train the critical thinking skills of its users (e.g., students) through project tasks, solving real-world tasks and communication situations. Finally, it is also critical focusing on process management training, and moving from monolithic tasks focused on solving language operations using AI to more complex project tasks where students can acquire the skills to evaluate and analyze information content in conjunction with comparisons and other tasks.

4 Translation pedagogy model using AI

The development of translation competence has been discussed extensively. Given that translation is essentially a practice-oriented activity, process-based approaches have been incorporated into different pedagogical frameworks. An important question, however, concerns the extent to which translation competence may be enhanced through these approaches. To reflect the realities of professional practice, project-based learning scenarios (Kiraly, Hansen-Schirra, 2013) can be employed in specific contexts, with predefined translation tasks designed according to the text type and communicative function. As AI has introduced automation into a wide range of professions, including translation, translator training must shift its focus towards fostering greater creativity and autonomy in trainees rather than relying primarily on teacher-led guidance. Only through the critical evaluation of tools and source materials can translators make effective use of technology while ensuring that their work remains as relevant and important as ever (Sin-wai, 2018). The key is to find pathways to critical decision-making through a wide range of skills, such as data management, legal awareness, data analysis, etc. Finally, ethics should be systematically integrated into the curriculum, as ethical conduct is distinct from legal compliance. Although both may occasionally result in the same course of action, they are grounded in fundamentally different forms of reasoning. (Baker, Jones, 2026, 318). Thus, ethical and moral considerations should occupy a central place in translator training, as they require cultivating a range of communicative and psychological subskills. Based on Djovčoš´s observations of the EMT model, PACTE model and NACT proposal (Djovčoš, 2026, 168), translator training must go beyond the mere acquisition of traditional skills and shift to socially applicable skillsets that presume training concepts of transferable skills, which should fit and complement the skillsets needed in the labour market (Vargová, 2021, 55). Therefore, we need to define more complex skills, including a variety of multilingual communication settings, in which the participants are aware of processes, but also of consequences and reasoning strategies – meaning "why this or that procedure is relevant for the specified objectives, and how its selection should be justified''. In short, the process-based, constructivist and sociological approach need a deeper understanding, structuring, and analysis of AI-powered tools. The table below is inspired by the concept of simulated translation bureaus (STBs; Konttinen, Salmi, 2026, 512), which highlights a pedagogical shift from a monolithic conception of translation training to a comprehensive project-based approach. The monolithic model is characterised by the decomposition of translation competence into separate classroom tasks, for example, lexical matching, terminology work, text production from keywords, or anonymisation of personal data. Although such

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activities may contribute to the development of selected micro-skills, they do not fully reflect the complexity of professional translation practice. The comprehensive project model, by contrast, approaches translation as a coordinated process involving project preparation, task distribution, client interaction, translation, revision, proofreading, and final delivery. Its pedagogical value lies in connecting linguistic problem-solving with process management, collaboration, and responsibility for the final product. As a result, the comprehensive model appears better suited to developing the integrated competence profile required of translators in contemporary professional settings.

Table 1 Comparison of translation pedagogy models (author´s own work)

Monolithic model	**Comprehensive project model**
Find equivalents for the following lexemes in your native language	Division of tasks: Assign the roles of project manager, lead translator, proofreader, and terminologist to team members
Find definitions for the selected terms	Customer contact: Collaboration with the client, working on a price quote
Select expressions from the text and create a bilingual table with definitions	Project preparation: project analysis, checking the availability of the necessary staff and equipment, and assigning the task to the translator
Create a text based on the specified keywords	Translation process: Translation using the latest tools, self-checking by the translator, proofreading/proofreading by another translator, if necessary, review of the text in the target language by an expert in the relevant field
Anonymise the personal data in the text.	Delivery of the final product: invoicing, checking customer satisfaction

Specifically, concrete training paradigms require further exploration. They would preferably be grounded in the following objectives:

1. audience-oriented cognition, where learners adapt to model the “cognitive environment” of target readers and align decisions with functional and cultural expectations;
2. shared cognition in teams, inside and outside classrooms, where learners practise dividing labour, externalising reasoning, pooling knowledge, and managing responsibility in collaborative workflows;
3. technology-mediated decision-making, where learners acquire the skills to evaluate tools and their suggestions critically, anticipate their impacts, and maintain quality assurance under real ethical constraints.

In the “human-in-the-loop” approach, I suggest using a format to include a comprehensive, process-based project model in translation pedagogy. Now, the question is: How does the "human-in-the-loop" approach differ from traditional human-only or fully automated workflows? We need to put that question to a series of verifiable tests of trainer-trainee interaction to determine how this positioning creates new pedagogical synergies between mental processes and social/material environments. This can be done exclusively through connecting training and research in and outside the classroom, using a framework that reconceptualises translator expertise in ways that challenge current training paradigms. Also, the implementation of concrete classroom vignettes or micro-case studies should benefit from the models, which take the trainer and trainees through each assignment by diving deep into the

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linguistic and technical analyses of processed material. This process must result in each participant engaging in critical self-reflection, with the trainer and trainees on the same hierarchical level.

The training system may be divided into 7 modules.

FOUNDATIONAL PHASE
[1. Workflow management] → [2. Tool landscape]

PLANNING PHASE
[3. Tasks planning]

APPLICATION PHASE
[4. Use cases and implementations]

CONTROL PHASE
[5. Quality assurance] → [6. Risk management]

REGULATIVE PHASE
[7. Legal and ethical themes]

Fig.1 Chronological and recursive organisation of the proposed seven-module training system in translation pedagogy (author's own work)

The figure illustrates the proposed modular training system in translation pedagogy as a chronologically structured yet recursive sequence. The model begins with workflow organisation and technological orientation, continues through task planning and situated implementation, and culminates in quality control, risk mitigation, and legal-ethical reflection. Although the modules are presented in a linear order for pedagogical clarity, they are mutually interconnected and function as a dynamic system rather than as isolated stages.

These phases must interact recursively throughout the entire training process.

Module 1. Workflow management

This module focuses on the organisation and coordination of the translation process as a structured professional activity. Students learn to work with time definitions, planning deadlines, and realistic task allocation for individual and collaborative projects. The module also develops skills in material collection, i.e., the systematic gathering of terminology resources, and background information necessary for informed translation work. An important component is recording, understood as the documentation of decisions, prompts, and changes to ensure transparency and traceability. Students are also trained to validate materials and outputs by checking the applicability of the resources used during the translation process. In addition, the module highlights communicating as a key workflow skill, including interaction with other stakeholders. Finally, it strengthens research competence, especially the ability to integrate information efficiently in support of translation decisions.

Module 2. Tool landscape

This module introduces students to the broader technological environment within which modern translation is carried out. It begins with data classification, which involves identifying and organising different types of linguistic and extra-linguistic data, such as terminology, corpora, metadata, client instructions, or domain-specific resources. Students are also familiarised with programming logic, not necessarily at an advanced technical level, but as a way of understanding automation, structured instructions, and the functioning of digital tools and AI-based systems. The module further covers clustering, that is, grouping texts, terms, translation problems, or user needs into meaningful categories to support efficient resource use and workflow organisation. Another essential area is concept modelling, through which students learn to map conceptual relations within specialised domains, create semantic structures, and understand how terminology and meaning are organised across different communicative contexts. Overall, this module aims to build technological awareness and critical digital literacy rather than merely instrumental tool use.

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Module 3. Tasks planning

This module develops students' ability to plan translation tasks strategically and purposefully. At its core is decision-making, understood as the capacity to select appropriate procedures, resources, and levels of intervention depending on the text type, client brief, communicative purpose, and technological context. The module also includes discourse re(generation), which refers to the ability not only to reproduce meaning across languages but also to reconstruct, reformulate, or generate discourse in ways that are appropriate to the communicative situation. This is particularly relevant when students work with adaptive translation, transcreation, summarisation, or AI-supported drafting. Another major component is authoring, which emphasises the translator's role as an active text producer who shapes the final communicative outcome rather than merely transfers linguistic content. Closely related to this is prompting, which is increasingly important in AI-assisted translation environments. Students learn how to formulate instructions effectively, refine queries, guide output generation, and critically assess how input design affects the quality and usefulness of AI-generated material.

Module 4. Use cases and implementation

This module translates theoretical competence into situated practice by exposing students to concrete professional scenarios. It begins with role definitions, which help students understand the different functions involved in translation projects, such as translator, reviser, terminologist, project manager, quality controller, localisation specialist, or AI-assisted content editor. By clarifying these roles, the module supports a more realistic understanding of collaborative translation work. It also focuses on applying resources, meaning the practical use of tools such as corpora, glossaries, style guides, machine translation systems, and AI applications to specific translation tasks. Students are trained not simply to use such resources, but to select them appropriately and integrate them into coherent workflows. A further component is testing resources, which involves evaluating the performance, relevance, limitations, and risks of tools and materials before and during implementation. In this way, the module fosters an experimental but critically informed attitude towards translation technologies and methods.

Module 5. Quality assurance

This module addresses the systematic control and improvement of translation quality throughout the process. Students learn the importance of comparing source and target texts, alternative outputs, tool-generated suggestions, and revised versions in order to identify relevant differences and make justified choices. The module develops editing skills as a central professional competence, including correction, stylistic refinement, post-editing of machine-generated content, and adaptation to communicative purpose. Another component is concept fit, which assesses whether terminology, phrasing, and textual solutions accurately correspond to the conceptual structure of the source domain and the needs of the target audience. The module also includes versioning, that is, managing multiple drafts and revisions in a controlled and transparent way, especially in collaborative and AI-supported workflows. Students further practise reviewing, both individually and collaboratively, in order to assess translation adequacy, fluency, accuracy, and usability. Finally, the module emphasises the consistency check, which includes terminological, stylistic, and formatting consistency throughout the text or project.

Module 6. Risk management

This module prepares students to recognise and mitigate the risks associated with technology-supported translation. One major focus is on hallucinations, especially in AI-generated content, where plausible but inaccurate, fabricated, or unverifiable outputs may occur. Students are trained to detect such problems and to subject outputs to critical scrutiny rather than accept them uncritically. The module also covers data leakage, with particular attention to the risks of uploading confidential, proprietary, or client-sensitive material to third-party systems. Another important aspect is bias check, which encourages students to identify ideological, cultural, gendered, or domain-specific distortions in tool outputs and training data. In addition, the module addresses over-automation mitigation, meaning the prevention of excessive dependence on automated systems at the expense of human judgment, professional responsibility, and contextual understanding. It also includes terminology drifting, a frequent problem in longer projects or AI-assisted workflows, where terminological choices gradually become unstable or inconsistent. Overall, this module strengthens strategic awareness, caution, and professional accountability.

Module 7. Legal and ethical themes

This module focuses on the normative framework within which translation and AI-supported language work must operate. It addresses copyright by teaching students to distinguish between protected and non-protected materials, to understand the legal implications of text reuse, and to recognise the boundaries of lawful transformation,

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quotation, and adaptation. Related to this is licensing, which concerns the permitted use of software, datasets, corpora, glossaries, and digital content within educational and professional practice. Students are also introduced to questions of personal and sensitive data protection, particularly regarding confidential documents, client materials, medical or legal content, and AI systems that process user input externally. Beyond compliance, the module fosters ethical reflection on authorship, responsibility, transparency, fairness, and the acceptable limits of automation in translation work. It aims to ensure that students can act not only effectively but also responsibly in increasingly complex communicative and technological environments.

Taken together, these seven modules present translator training as a multidimensional system that integrates workflow competence, technological literacy, strategic planning, situated implementation, quality control, risk awareness, and legal and ethical responsibility. Such a modular framework more adequately reflects the realities of contemporary multilingual language operations than models based solely on isolated linguistic subskills.

Conclusion

Translation using artificial intelligence is not yet sufficient to adequately replace human translators and interpreters in professional multilingual transfer. Artificial intelligence cannot be used without human control and professional review, either now or in the near future. The arguments in favour of using artificial intelligence, based on financial and budgetary considerations, obscure a false economy, as the costs of failure far exceed those of proper implementation by a human translator. This situation requires increased awareness of the risks associated with certain workflows and communication, as well as the creation and provision of new, appropriate professional development opportunities. In addition to the individual measures mentioned in this article, language professionals, educators, translators and interpreters, employers, and professional associations should collaborate to organise conferences or events and to draft documents that help disseminate important information about the inclusion of AI tools in teaching. Translator training should move beyond monolithic exercises centred on isolated linguistic operations and instead foreground complex processual tasks in which students learn to analyse briefs, critically interact with AI, compare alternatives, justify choices, revise collaboratively, and deliver accountable outcomes. Such an approach does not deny the usefulness of AI; rather, it situates AI within a broader professional ecology in which human translators remain responsible for meaning, context, ethics, and quality. Seen from this perspective, AI is neither simply a threat nor simply a solution. It is a catalyst that makes visible what translator education must now prioritise: the cultivation of process-based expertise that links cognitive performance with social responsibility in multilingual communication. This direction also strengthens the project-based, critical-thinking-oriented training model outlined in the current draft. The goals must be to motivate trainers and their learners to shift from product-centred teaching and evaluation for the acquisition of process-based skills in translator training under the human-in-the-loop model, and to frame translation as a situated practice in which cognitive effort is shaped by social settings, expectations, technical skills, and experience. The integration of mutual cooperation between academia and practice, tailored to specific situations and projects, should promote the adoption of best practices and provide professional support for language professionals.

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