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## ANALYSIS OF CRITICAL THINKING SKILLS: HOW DO STUDENTS PERCEIVE AND EVALUATE AI TRANSLATION TOOLS?

### ABSTRACT

This study explores students' perceptions of AI-assisted translation, with a focus on how they engage with and evaluate AI-generated outputs. By analysing students' reflections on translation exercises using Large Language Models (LLMs) such as Google Gemini and ChatGPT-4o, the research examines the perceived benefits, challenges and limitations of AI in literary translation. The results reveal that while students recognise the efficiency and support AI tools provide, they also identify issues related to contextual accuracy, cultural adaptation and translation reliability. The findings suggest that AI literacy and critical engagement with machine-generated translations should be integral components of translator training. Rather than replacing human expertise, AI tools serve as collaborative aids that require students to apply analytical and revision skills to ensure translation quality. These insights contribute to the ongoing discussion on the role of AI in translation education and its implications for future translator training.

**Keywords:** AI-assisted translation, student perceptions, computer-assisted literary translation (CALT), Large Language Models (LLMs), AI literacy in translation studies

### ABSTRAKT

ANALIZA UMIEJĘTNOŚCI KRYTYCZNEGO MYŚLENIA:  
JAK STUDENCI POSTRZEGAJĄ I OCENIAJĄ NARZĘDZIA TŁUMACZENIOWE AI?

Niniejsze badanie ukazuje podejście studentów do tłumaczeń wspomaganych sztuczną inteligencją (AI), przy czym szczególną uwagę zwraca się na to, w jaki sposób angażują się oni i oceniają wyniki generowane przez AI. Refleksje studentów na temat ćwiczeń tłumaczeniowych z wykorzystaniem dużych modeli językowych (LLM), takich jak Google

Gemini i ChatGPT-4o, dostarczają wgląd w potencjalne korzyści, wyzwania oraz ograniczenia związane ze sztuczną inteligencją w tłumaczeniach literackich. Wyniki wskazują, że choć studenci doceniają wydajność i wsparcie zapewniane przez narzędzia AI, jednocześnie dostrzegają problematyczne kwestie dotyczące poprawności kontekstowej, adaptacji kulturowej i rzetelności tłumaczenia. Wnioski sugerują, że umiejętność korzystania ze sztucznej inteligencji i krytycznego spojrzenia na tłumaczenia generowane maszynowo powinny być integralnymi elementami szkolenia tłumaczy. Narzędzia sztucznej inteligencji służą jako dodatkowa pomoc, która wymaga od studentów zastosowania umiejętności analitycznych i weryfikacyjnych w celu zapewnienia jakości tłumaczenia. Wyniki badania stanowią wkład w toczącą się dyskusję na temat roli sztucznej inteligencji w edukacji tłumaczeniowej i jej implikacji dla przyszłego szkolenia tłumaczy.

**Słowa kluczowe:** tłumaczenie wspomagane sztuczną inteligencją, tłumaczenie literackie wspomagane komputerowo (CALT), duże modele językowe (LLM), znajomość sztucznej inteligencji w przekładoznawstwie

## 1. Introduction

Concerns about the prevalence and popularity of AI-based tools such as Large Language Models (LLMs) are increasingly being heard in academia<sup>1</sup>. The integration of AI into translation studies, particularly in literary translation, raises questions about the role of critical thinking in assessing machine-generated outputs. AI translation tools use advanced machine learning algorithms to provide increasingly accurate and contextually appropriate translations. Previous studies have highlighted their utility in language learning, enhancing vocabulary acquisition, and improving grammatical understanding<sup>2</sup>. However, fewer studies have

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<sup>1</sup> See: L. Yan et al., *Practical and ethical challenges of large language models in education: A systematic scoping review*, "British Journal of Educational Technology" 2032, August 6, [online], <https://bera-journals.onlinelibrary.wiley.com/doi/10.1111/bjet.13370> [accessed: 19.03.2025]; B.D. Lund, *ChatGPT and a new academic reality: Artificial Intelligence-written research papers and the ethics of the large language models in scholarly publishing*, "JASIST" 2023, March 10, [online], <https://asistdl.onlinelibrary.wiley.com/doi/10.1002/asi.24750> [accessed: 19.03.2025]; D. Weber-Wulff et al., *Testing of detection tools for AI-generated text*, "International Journal for Educational Integrity" 2023, 19 (1), [online], <https://doi.org/10.1007/s40979-023-00146-z>, [accessed: 19.03.2025]; L. Weidinger et al., *Ethical and social risks of harm from Language Models*, "arXiv.org" 2021, [online], <https://arxiv.org/abs/2112.04359> [accessed: 19.03.2025].

<sup>2</sup> See: M. Liu, *Exploring the Application of Artificial intelligence in Foreign Language Teaching: Challenges and future development*, "SHS Web of Conferences" 2023, 168, 03025, [online], <https://doi.org/10.1051/shsconf/202316803025> [accessed: 19.03.2025]; J.H. Woo, H. Choi, *Systematic review for AI-based*

explored how students critically engage with and evaluate these tools. Given the growing reliance on AI-assisted translation, understanding students' perspectives on assessing AI-generated translations becomes crucial in translator training.

Facione<sup>3</sup> broadly defined critical thinking as “purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference”. It involves questioning assumptions, identifying biases, and making reasoned judgments<sup>4</sup>. It is a crucial skill in higher education that enables students to navigate complex problems and make informed decisions. Critical thinking skills are often developed through activities that require evaluation and analysis, such as problem-solving tasks and peer assessments<sup>5</sup>. In translation studies, critical thinking is essential for

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*language learning tools*, “Diji'teol Keontencheu Haghoe Nonmunji/Dijiteol Kontencheu Hakoe Nonmunji” 2021, 22 (11), pp. 1783–1792, [online], <https://doi.org/10.9728/dcs.2021.22.11.1783> [accessed: 19.03.2025]; R. Gozalo-Brizuela, E.C. Garrido-Merchán, *A survey of Generative AI Applications*, “arXiv (Cornell University)” 2023, [online], <https://doi.org/10.48550/arxiv.2306.02781> [accessed: 18.03.2025]; Y. Liang, *Balancing: The effects of AI tools in Educational context*, “Frontiers in Humanities and Social Sciences” 2023, 3 (8), pp. 7–10, [online], <https://doi.org/10.54691/fhss.v3i8.5531> [accessed: 19.03.2025]; L. Kong, *Artificial Intelligence-Based Translation Technology in Translation Teaching*, “Computational Intelligence and Neuroscience” 2022, pp. 1–9, [online], <https://doi.org/10.1155/2022/6016752> [accessed: 19.03.2025]; T. Ilkka, *The impact of artificial intelligence on learning, teaching, and education*, Ministerio De Educación, 2018, [online], <https://doi.org/10.2760/12297> [accessed: 19.03.2025]; F. Huang, *The Application of AI Translation Technologies in Translation Teaching: Challenges and opportunities*, “DEStech Transactions on Social Science, Education and Human Science, emit” 2020, [online], <https://doi.org/10.12783/dtssehs/emit2020/35124> [accessed: 19.03.2025]; Y. Wang, *Artificial intelligence Technologies in College English Translation teaching*, “Journal of Psycholinguistic Research” 2023, 52 (5), pp. 1525–1544, [online], <https://doi.org/10.1007/s10936-023-09960-5> [accessed: 19.03.2025]; Z. Wei., *The development prospect of English translation software based on artificial intelligence technology*, “Journal of Physics. Conference Series” 2020, 1533 (3), 032081, [online], <https://doi.org/10.1088/1742-6596/1533/3/032081> [accessed: 19.03.2025]; S. Zheng, S. Zhu, *A study of computer aided translation based on artificial intelligence technology*, “Journal of Physics. Conference Series” 2020, 1646 (1), 012127, [online], <https://doi.org/10.1088/1742-6596/1646/1/012127> [accessed: 19.03.2025]; *Artificial Intelligence in Education*, 2023.

<sup>3</sup> P.A. Facione, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction*, 1990, p. 3.

<sup>4</sup> R. Paul, L. Elder, *Aspiring Thinker's Guide to Critical Thinking*, 2019.

<sup>5</sup> A. Kanwal, I.H. Butt, *Impact of critical thinking skills on prospective teachers' academic achievement*, “Review of Applied Management and Social Sciences” 2021, 4 (4), pp. 773–781, [online], <https://doi.org/10.47067/ramss.v4i4.182> [accessed: 19.03.2025]; S. Zaman, H. Dar, S.S. Arshad, *Assessing Students' Life Skills and their Sources of Learning*, “Review of Education, Administration and Law” 2023, 6 (2), pp. 167–179, [online], <https://doi.org/10.47067/real.v6i2.323> [accessed: 19.03.2025]; C.P. Dwyer, M.J. Hogan, I. Stewart, *An integrated critical thinking framework for the 21st century*, “Thinking Skills and Creativity” 2014, 12, pp. 43–52, [online], <https://doi.org/10.1016/j.tsc.2013.12.004> [accessed: 18.03.2025]; T. Fairuz, I. Kaniawati, P. Sinaga, *Integrated science teaching materials oriented on critical thinking skills and information literacy*, “Journal of Physics. Conference Series” 2019, 1157, 022037, [online], <https://doi.org/10.1088/1742-6596/1157/2/022037> [accessed:

navigating ambiguity, cultural adaptation and textual interpretation<sup>6</sup>. It enables translators to assess source texts beyond literal meanings and make informed decisions about equivalence, audience expectations or stylistic adaptation. According to Kussmaul, “successful translation involves developing strategies for solving problems, rather than simply applying linguistic knowledge”<sup>7</sup>, which are closely tied to critical thinking, as translators must evaluate multiple linguistic and cultural possibilities before selecting the most appropriate rendering. Furthermore, Göpferich highlights metacognition as a key component of critical thinking in translation, where translators must continually “monitor their own problem-solving processes and revise their work accordingly”<sup>8</sup>. This aligns with Pietrzak’s<sup>9</sup> perspective on metacognitive translator competence, which underscores the transition from other-regulation to self-regulation. Novice translators initially rely on external feedback but gradually develop autonomous strategies for assessing and refining their translations. Such self-regulatory skills are particularly crucial in AI-assisted translation, as they enable translators to engage with AI outputs critically, which further result in identifying errors and making informed revisions rather than passively accepting machine-generated text. In the context of AI-assisted translation, this means not only using AI-generated outputs but also assessing their quality, questioning automated choices, and identifying potential biases or contextual mismatches<sup>10</sup>. As Bowker states, critical thinking is “the core skill of digital literacy”<sup>11</sup>.

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18.03.2025]; N. Ismail, *Critical Thinking Skills of an Eighth Grade Male Student with High Mathematical Ability in Solving Problems*, “Journal of Physics. Conference Series” 2018, 947, 012073, [online], <https://doi.org/10.1088/1742-6596/947/1/012073> [accessed: 19.03.2025]; L.D. English, *Ways of thinking in STEM-based problem solving*, “ZDM” 2023, 55 (7), pp. 1219–1230, [online], <https://doi.org/10.1007/s11858-023-01474-7> [accessed: 18.03.2025]; M. Bazhouni, *Integrating critical thinking skills in higher education*, “Education and Linguistics Research” 2018, 4 (1), 65, [online], <https://doi.org/10.5296/elr.v4i1.12964> [accessed: 18.03.2025].

<sup>6</sup> A. Pym, *On Translator Ethics: Principles for Mediation between Cultures*, 2012; J. House, *Translation Quality Assessment: Past and Present*, [in:] *Translation: A Multidisciplinary Approach*. Palgrave Advances in Language and Linguistics, J. House (ed.), London 2014, pp. 13–30 [online], [https://doi.org/10.1057/9781137025487\\_13](https://doi.org/10.1057/9781137025487_13) [accessed: 18.03.2025].

<sup>7</sup> P. Kussmaul, *Training the Translator*, 1995, p. 37.

<sup>8</sup> S. Göpferich, *Towards a model of translation competence and its acquisition: The longitudinal study TransComp*, 2009, p. 21.

<sup>9</sup> P. Pietrzak, *Metacognitive translator competence: From other-regulation to self-regulation*, “Konińskie Studia Językowe” 2021, 9 (2), pp. 229–247, [online], <https://ksj.konin.edu.pl/wp-content/uploads/2022/04/KSJ-92-229-247-Pietrzak.pdf> [accessed: 19.03.2025].

<sup>10</sup> L. Bowker, *Machine Translation and Global Research: Towards Improved Machine Translation Literacy in the Scholarly Community*, 2019.

<sup>11</sup> Ibidem.

Inspired by the above reflections, the present study aims to explore how students perceive and critically assess AI translation tools in the context of literary translation. Rather than testing whether AI-assisted translation improves critical thinking skills, the research examines students' engagement with AI-generated outputs, their ability to identify translation strengths and weaknesses, and their reflections on AI's role in translation practice. By analysing students' qualitative feedback, this study provides insights into their perceptions of AI translation tools and their ability to engage critically with machine-generated texts.

The study is structured as follows: the next section outlines the methodology, including research tools, participants, and procedures. The results section presents student responses categorised into positive impressions, negative impressions, and recommendations for improvement. Finally, the discussion considers the implications of these findings for translator training, addresses study limitations and suggests directions for future research.

## 2. Method

### 2.1. Research tools and procedure

In the research, sixteen participants took part, including students in the third year of English Philology with German Language at Bachelor's level, and in the second year of Master's of English Philology and Translation Studies. While the sample size is relatively small, it provides valuable qualitative insights into students' perceptions of AI translation tools. The study was conducted as part of students' coursework, following a structured procedure:

#### 1. Introduction to AI translation tools

Participants were introduced to the concepts of Computer-Assisted Literary Translation (CALT), Large Language Models (LLMs), and prompt formulation techniques. The latter was based on guidance from Darul (n.d.), *Chat GPT w służbie tłumaczom i specjalistom językowym* (<https://www.e-tlumacze.net/artykuly/chat-gpt-w-sluzbie-specjalistom-jezykowym>).

#### 2. Translation assignments

Participants completed three translation tasks using two LLMs: Google Gemini and ChatGPT-4o.

Task 1: English-to-Polish Translation of Advertisement Slogans

a) Students translated three well-known advertising slogans:

- “When you care enough to send the very best” (Hallmark, 1934).
  - “Breakfast of champions”(Wheaties, 1935).
  - “The milk chocolate that melts in your mouth, not in your hand”. (M&Ms, 1954)<sup>12</sup>.
- b) They were required to formulate prompts specifying a target audience and desired slogan style (e.g., humorous, nostalgic).
- c) Participants could revise their prompts until they were satisfied with the AI-generated translations.

#### Task 2: Polish-to-English Translation of Advertisement Slogans

- d) Students translated one of twelve Polish advertisement slogans<sup>13</sup>.
- e) They selected an LLM of their choice (Google Gemini, ChatGPT-4o, or both).
- f) They crafted prompts defining the target audience and style.

#### Task 3: Back-Translation of a Literary Poem

- g) Students translated “Madama Butterfly” by Maria Pawlikowska-Jasnorzevska from Polish to English and then back to Polish using an LLM of their choice<sup>14</sup>.
- h) They applied lessons from previous tasks to optimise prompt formulation.

### 3. Post-Task reflection

After completing and discussing their translations, participants wrote a short reflection addressing the following task:

*Describe your impressions of CALT (computer-assisted literary translation) practice. What difficulties do translators face in this field? What improvements would you suggest, and how do you see the future of CALT? Also, include details about the translation process and the tools used. (5–10 sentences)*

Students could submit their reflections in either Polish or English.

<sup>12</sup> P. Berry, *50 Memorable Advertising Slogans*, 2023, February 2, [online], <https://www.linkedin.com/pulse/50-memorable-advertising-slogans-patricia-berry> [accessed: 18.03.2025].

<sup>13</sup> K. Rokseła, *23 przykładowe hasła reklamowe, które wpadają w ucho*, “WeNet” 2024, January 31, [online], <https://wenet.pl/blog/23-przykladowe-hasla-reklamowe-ktore-wpadaja-w-ucho> [accessed: 19.03.2025].

<sup>14</sup> *WolneLektury.pl*, [online], <https://wolnelektury.pl/katalog/lektura/pawlikowska-jasnorzevska-madama-butterfly.html> [accessed: 19.03.2025].

### 3. Data analysis

The collected data consisted of students' reflections on their experiences with AI-assisted translation. Responses were examined using thematic analysis and ordered into three main themes: (1) positive impressions, (2) negative impressions and (3) recommendations for improvement. In each of the main thematic categories, three common patterns were selected. Table 1 presents categorised data and exemplary comments:

**Table 1.** Impressions on CALT

| Themes/<br>Common<br>patterns             | Number of<br>participants | Example comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Positive impressions                      |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Better<br>understanding<br>and efficiency | 5                         | <ul style="list-style-type: none"> <li>– "Jestem bardzo usatysfakcjonowana ćwiczeniami z CALT. Dowiedziałam się jakich narzędzi można używać do tego procesu – mianowicie ChatGPT oraz tłumacz DeepL może być w tym pomocny" [I am very satisfied with the CALT exercises. I learned what tools can be used for this process – namely ChatGPT and DeepL translator can be helpful].</li> <li>– "Tłumaczenie CALT było dla mnie przyjemnym zadaniem zwłaszcza przy użyciu chatu gpt którego można dowolnie instruować aby tekst który chcemy uzyskać był jak najbliższy naszej interpretacji" [CALT translation was an enjoyable task for me, especially using ChatGPT, which can be instructed to make the text as close to our interpretation as possible].</li> </ul> |
| Educational<br>value                      | 4                         | <ul style="list-style-type: none"> <li>– "The class devoted to computer-assisted-literary-translation was very captivating and insightful".</li> <li>– "Throughout this class we collected useful information regarding the characteristics of literary translation and the techniques used in the translation of such texts".</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Potential for<br>future                   |                           | <ul style="list-style-type: none"> <li>– "Uważam że przyszłość CALT jest jak najbardziej pewna" [I believe that the future of CALT is absolutely certain].</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Themes/<br>Common<br>patterns        | Number of<br>participants | Example comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential for<br>future [cont.]      | 6                         | <ul style="list-style-type: none"> <li>– “W dzisiejszych czasach ciężko jest sobie wyobrazić by jakikolwiek tłumacz niezależnie czy profesjonalista czy amator nie używał narzędzi CAT w procesie tłumaczenia” [Nowadays, it is hard to imagine any translator, whether professional or amateur, not using CAT tools in the translation process].</li> </ul>                                                                                                                                                                                                                                     |
| Negative impressions                 |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Cultural and<br>contextual<br>errors | 7                         | <ul style="list-style-type: none"> <li>– “Niewątpliwie największym problemem tłumaczenia CALT jest problem w rozróżnieniu różnic kulturowych” [Undoubtedly, the biggest problem with CALT translation is the issue of distinguishing cultural differences].</li> <li>– “Język cały czas ewoluuje a powszechny dostęp do internetu sprawia że nowe wyrażania pojawiają się regularnie i rozprzestrzeniają się w zawrotnym tempie” [Language is constantly evolving, and the widespread access to the internet means that new expressions appear regularly and spread at a rapid pace].</li> </ul> |
| Quality                              | 8                         | <ul style="list-style-type: none"> <li>– “AI is... very developed and translates such texts very well, but it lacks the critical and creative thinking needed to capture allusions, humor, hidden messages”.</li> <li>– “Tłumaczenia z użyciem CALT są według mnie jeszcze we wczesnej fazie narzędzia te popełniają dużą błądów i tłumaczenia tą często brzmią nienaturalnie” [CALT translations are, in my opinion, still in an early phase; these tools make many mistakes, and their translations often sound unnatural].</li> </ul>                                                         |
| Dependence<br>and safety             | 5                         | <ul style="list-style-type: none"> <li>– “Przypuszczam że za parę lat tłumacze w tej dziedzinie będą tylko nanosić poprawki” [I suppose that in a few years, translators in this field will only be making corrections].</li> <li>– “Obawiam się że w przyszłości sztuczna inteligencja będzie kształtować naszą kulturę i forsować poprawność polityczną gdzie tylko się da” [I fear that in the future, artificial intelligence will shape our culture and enforce political correctness wherever possible].</li> </ul>                                                                        |

| Themes/<br>Common<br>patterns   | Number of<br>participants | Example comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommendations for improvement |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Training for<br>AI tools        | 6                         | <ul style="list-style-type: none"> <li>– “By jak najlepiej wykorzystać możliwości ChatuGPT warto nie tylko poprosić go by przetłumaczył dany wiersz ale tak skonstruować prośbę by zawarte w niej zostały informacje odnośnie wiersza” [To make the best use of ChatGPT's capabilities, it is worth not only asking it to translate a given poem but also constructing the request in such a way that it includes information about the poem].</li> <li>– “Możliwość nauczania się obsługi różnych narzędzi CAT mogłoby być bardzo pomocne lub przynajmniej zapoznałoby studentów z dostępnymi środkami wspomagającymi tłumaczenie” [The ability to learn how to use various CAT tools could be very helpful or at least familiarize students with available translation aids].</li> </ul> |
| Human<br>supervision            | 7                         | <ul style="list-style-type: none"> <li>– “Moje wrażenia z ćwiczeniami z CALT są raczej pozytywne... uważam że nie należy opierać się tylko na tłumaczeniach wygenerowanych za pomocą e.g. ChatGPT” [My impressions of the CALT exercises are rather positive... I believe that one should not rely solely on translations generated by tools like ChatGPT].</li> <li>– “Technologia nie jest idealna i mogą być różne konteksty w tłumaczeniach które jedynie człowiek potrafi zrozumieć i dopasować w tekście” [Technology is not perfect, and there can be various contexts in translations that only a human can understand and adapt in the text].</li> </ul>                                                                                                                          |
|                                 | 5                         | <ul style="list-style-type: none"> <li>– “Język cały czas ewoluuje a powszechny dostęp do internetu sprawia że nowe wyrażania pojawiają się regularnie... Myślę że w przyszłości sztuczna inteligencja sama będzie analizować trendy językowe pojawiające się w internecie” [Language is constantly evolving, and the widespread access to the internet means that new expressions appear regularly... I think that in the future, artificial intelligence will analyse language trends appearing on the internet by itself].</li> <li>– “Myślę że tłumaczenia maszynowe z użyciem stron tego pokoju mogą ułatwić pracę tłumacza” [I think that machine translations using sites like this can make a translator's work easier].</li> </ul>                                                |

### 3.1. Positive impressions: AI as a helpful support tool

The analysis of data gathered reveals a mix of positive and negative impressions among students. On the positive side, five students highlighted the enhanced understanding and efficiency gained through using AI tools, such as ChatGPT, for translation tasks. This group noted that AI could significantly accelerate the translation process and allow translators to focus more on proofreading. Four participants found the practical exercises educational, providing valuable insights into the complexities of literary translation and the capabilities of AI and machine translation (MT). Moreover, six students expressed optimism about the future of computer-assisted literary translation tools. They anticipate that these tools will become more reliable and capable of handling complex texts with greater accuracy.

Participant 9: "W przyszłości uważam, że te narzędzia będą coraz bardziej udoskonalane i że w pewnym momencie będą w stanie poprawnie tłumaczyć wszystkie teksty i dokumenty" [In the future, I believe that these tools will be increasingly improved and that at some point they will be able to correctly translate all texts and documents].

### 3.2. Negative impressions: AI struggles with cultural and contextual nuances

Conversely, the analysis also uncovered several challenges. Seven participants were concerned about AI's ability to grasp cultural nuances. They reported that AI failed to recognise figurative language and idiomatic expressions, and as a result translations were literal or misleading.

Participant 7: "W dziedzinie tłumaczeń największymi trudnościami wydają mi się: zachowanie rymów i kontekstu kulturowego". [In the field of translation, the biggest difficulties seem to me to be: preserving rhyme and cultural context].

Participant 10: "Niewątpliwie największym problemem tłumaczenia CALT jest problem w rozróżnieniu różnic kulturowych". [Undoubtedly, the biggest problem with CALT translation is the issue of distinguishing cultural differences].

Eight students questioned the quality and reliability of AI translations. They stressed that these often lacked the depth and emotional resonance required for literary texts and, therefore, the AI translations need human intervention for satisfactory results. Additionally, five participants raised issues about over-reliance on AI tools and fear that it might decline translators' skills and creativity, and potentially influence cultural outputs and political correctness.

#### 4. Recommendations for improvement: AI literacy and translator training

To address these challenges, students suggested several improvements. Six students recommended better training in the effective use of AI tools and the formulation of precise prompts, calling for more integrated training in the curriculum. Seven students emphasised the importance of continued human involvement in the translation process, particularly for literary texts, and supported a hybrid approach where AI provides initial translations proofread by human translators.

Participant 12: “Jednak nie zapominajmy, że dalej potrzebny jest ‘human touch’ w tłumaczeniach, ponieważ technologia nie jest idealna i mogą być różne konteksty w tłumaczeniach, które jedynie człowiek potrafi zrozumieć i dopasować w tekście”. [However, let’s not forget that you still need a ‘human touch’ in translation, as technology is not perfect and there may be different contexts in translation that only a human can understand and match in the text]

Finally, five participants advocated for ongoing technological advancements to develop AI algorithms that better understand and incorporate cultural and contextual nuances in translations.

#### 5. Discussion and Conclusion

The findings suggest that students engage critically with AI-generated translations by recognising both the advantages and limitations of AI-assisted translation. Most participants appreciated the efficiency of AI tools and their potential to assist in drafting translations. However, students also identified challenges related to cultural adaptation, idiomatic expressions, and overall translation reliability – indicating an awareness of AI’s limitations that aligns with existing concerns in translation research<sup>15</sup>.

While these results highlight students’ awareness of AI-generated translations, the study does not directly measure whether critical thinking skills were developed or improved. Unlike experimental designs that track skill progression over time, this study is based on students’ self-reported reflections, which provide insights into perceptions rather than measurable cognitive change. As Pietrzak<sup>16</sup> notes, the

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<sup>15</sup> J. House, *Translation Quality Assessment...*; L. Bowker, *Machine Translation...*

<sup>16</sup> P. Pietrzak, *Metacognitive translator competence...*

transition from external regulation to self-regulation in translation competence is a gradual process, and assessing its development requires longitudinal studies or controlled experiments.

## 6. Limitations and implications for future research

One key limitation of this study is the lack of a pre-test/post-test design, making it difficult to determine whether students' critical thinking evolved as a result of using AI tools. Future research could implement a comparative study, measuring students' analytical abilities before and after AI-assisted translation exercises to track cognitive changes more precisely. Additionally, incorporating a control group (students translating without AI vs. students using AI) could help determine whether exposure to AI tools fosters a more analytical approach to translation.

Another area for further study is the role of AI literacy in translator training. Bowker<sup>17</sup> emphasises that effectively using machine translation tools requires more than technical proficiency – it demands the ability to critically assess AI-generated output, identify errors, and refine translations accordingly. Future research could investigate whether specific AI training modules improve students' ability to evaluate machine-generated translations critically.

Despite these limitations, the study provides valuable insights into how students engage with AI-assisted translation and perceive its role in translation practice. As AI continues to shape the translation industry, understanding how future translators assess, interact with, and refine AI-generated translations will be essential in developing effective translator training programs.

## REFERENCES

- AI tools in teaching and learning*, "Teaching Commons" 2023, April 21, [online], <https://teachingcommons.stanford.edu/news/ai-tools-teaching-and-learning> [accessed: 18.03.2025].
- Alkhawaja L., *Artificial intelligence in education*, "International Journal of Computer-assisted Language Learning and Teaching" 2023, 13 (1), pp. 1–22, [online], <https://doi.org/10.4018/ijcallt.329607> [accessed: 18.03.2025].

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<sup>17</sup> L. Bowker, *Machine Translation...*

*Artificial Intelligence in Education*, 2023.

Bazhouni M., *Integrating critical thinking skills in higher education*, "Education and Linguistics Research" 2018, 4 (1), 65, [online], <https://doi.org/10.5296/elr.v4i1.12964> [accessed: 18.03.2025].

Berry P., *50 Memorable Advertising Slogans*, 2023, February 2, [online], <https://www.linkedin.com/pulse/50-memorable-advertising-slogans-patricia-berry> [accessed: 18.03.2025].

Bowker L., *Machine Translation and Global Research: Towards Improved Machine Translation Literacy in the Scholarly Community*, 2019.

Chan C.K.Y., *Is AI changing the rules of academic misconduct? An in-depth look at students' perceptions of "AI-giarism"*, "arXiv (Cornell University)" 2023, [online], <https://doi.org/10.48550/arxiv.2306.03358> [accessed: 18.03.2025].

Chan C.K.Y., Lee K.K.W., *The AI generation gap: Are Gen Z students more interested in adopting generative AI such as ChatGPT in teaching and learning than their Gen X and millennial generation teachers?*, "Smart Learning Environments" 2023, 10 (1), [online], <https://doi.org/10.1186/s40561-023-00269-3> [accessed: 18.03.2025].

Dong Y., *Revolutionizing Academic English Writing through AI-Powered Pedagogy: Practical Exploration of Teaching Process and Assessment*, "Journal of Higher Education Research" 2023, 4 (2), 52, [online], <https://doi.org/10.32629/jher.v4i2.1188> [accessed: 18.03.2025].

Dwyer C.P., Hogan M.J., Stewart I., *An integrated critical thinking framework for the 21st century*, "Thinking Skills and Creativity" 2014, 12, pp. 43–52, [online], <https://doi.org/10.1016/j.tsc.2013.12.004> [accessed: 18.03.2025].

English L.D., *Ways of thinking in STEM-based problem solving*, "ZDM" 2023, 55 (7), pp. 1219–1230, [online], <https://doi.org/10.1007/s11858-023-01474-7> [accessed: 18.03.2025].

Ennis R.H., *The Nature of Critical Thinking: An Outline of Critical Thinking Dispositions and Abilities*, 2011.

*Ethical use of AI in writing assignments*, Center for Teaching Excellence, [online], <https://cte.ku.edu/ethical-use-ai-writing-assignments> [accessed: 18.03.2025].

Facione P.A., *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction*, 1990.

Fairuz T., Kaniawati I., Sinaga P., *Integrated science teaching materials oriented on critical thinking skills and information literacy*, "Journal of Physics. Conference Series" 2019, 1157, 022037, [online], <https://doi.org/10.1088/1742-6596/1157/2/022037> [accessed: 18.03.2025].

Göpferich S., *Towards a model of translation competence and its acquisition: The longitudinal study TransComp*, 2009.

Gozalo-Brizuela R., Garrido-Merchán E.C., *A survey of Generative AI Applications*, "arXiv (Cornell University)" 2023, [online], <https://doi.org/10.48550/arxiv.2306.02781> [accessed: 18.03.2025].

House J., *Translation Quality Assessment: Past and Present*, [in:] *Translation: A Multidisciplinary Approach*. Palgrave Advances in Language and Linguistics, J. House (ed.), London 2014, [online], [https://doi.org/10.1057/9781137025487\\_13](https://doi.org/10.1057/9781137025487_13) [accessed: 18.03.2025].

- Huang F., *The Application of AI Translation Technologies in Translation Teaching: Challenges and opportunities*, "DEStech Transactions on Social Science, Education and Human Science, emit" 2020, [online], <https://doi.org/10.12783/dtssehs/emit2020/35124> [accessed: 19.03.2025].
- Ilkka T., *The impact of artificial intelligence on learning, teaching, and education*, Ministerio De Educación, 2018, [online], <https://doi.org/10.2760/12297> [accessed: 19.03.2025].
- Ismail N., *Critical Thinking Skills of an Eighth Grade Male Student with High Mathematical Ability in Solving Problem*, "Journal of Physics. Conference Series" 2018, 947, 012073, [online], <https://doi.org/10.1088/1742-6596/947/1/012073> [accessed: 19.03.2025].
- Kanwal A., Butt I.H., *Impact of critical thinking skills on prospective teachers' academic achievement*, "Review of Applied Management and Social Sciences" 2021, 4 (4), pp. 773–781, [online], <https://doi.org/10.47067/ramss.v4i4.182> [accessed: 19.03.2025].
- Kong L., *Artificial Intelligence-Based Translation Technology in Translation Teaching*, "Computational Intelligence and Neuroscience" 2022, pp. 1–9, [online], <https://doi.org/10.1155/2022/6016752> [accessed: 19.03.2025].
- Kussmaul P., *Training the Translator*, 1995.
- Liang Y., *Balancing: The effects of AI tools in Educational context*, "Frontiers in Humanities and Social Sciences" 2023, 3 (8), pp. 7–10, [online], <https://doi.org/10.54691/fhss.v3i8.5531> [accessed: 19.03.2025].
- Liu M., *Exploring the Application of Artificial intelligence in Foreign Language Teaching: Challenges and future development*, "SHS Web of Conferences" 2023, 168, 03025, [online], <https://doi.org/10.1051/shsconf/202316803025> [accessed: 19.03.2025].
- Lund B.D., *ChatGPT and a new academic reality: Artificial Intelligence-written research papers and the ethics of the large language models in scholarly publishing*, "JASIST" 2023, March 10, [online], <https://asistdl.onlinelibrary.wiley.com/doi/10.1002/asi.24750> [accessed: 19.03.2025].
- Paul R., Elder L., *Aspiring Thinker's Guide to Critical Thinking*, 2019.
- Pietrzak P., *Metacognitive translator competence: From other-regulation to self-regulation*, "Konińskie Studia Językowe" 2021, 9 (2), pp. 229–247, [online], <https://ksj.konin.edu.pl/wp-content/uploads/2022/04/KSJ-92-229-247-Pietrzak.pdf> [accessed: 19.03.2025].
- Popenici S.A.D., Kerr S., *Exploring the impact of artificial intelligence on teaching and learning in higher education*, "Research and Practice in Technology Enhanced Learning/Research and Practice in Technology Enhanced Learning" 2017, 12 (1), 22, [online], <https://doi.org/10.1186/s41039-017-0062-8> [accessed: 19.03.2025].
- Pym A., *On Translator Ethics: Principles for Mediation between Cultures*, 2012.
- Roksela K., *23 przykładowe hasła reklamowe, które wpadają w ucho*, "WeNet" 2024, January 31, [online], <https://wenet.pl/blog/23-przykladowe-hasla-reklamowe-ktore-wpadaja-w-ucho> [accessed: 19.03.2025].

- Wang Y., *Artificial intelligence Technologies in College English Translation teaching*, "Journal of Psycholinguistic Research" 2023, 52 (5), pp. 1525–1544, [online], <https://doi.org/10.1007/s10936-023-09960-5> [accessed: 19.03.2025].
- Weber-Wulff D. et al., *Testing of detection tools for AI-generated text*, "International Journal for Educational Integrity" 2023, 19 (1), [online], <https://doi.org/10.1007/s40979-023-00146-z> [accessed: 19.03.2025].
- Wei Z., *The development prospect of English translation software based on artificial intelligence technology*, "Journal of Physics. Conference Series" 2020, 1533 (3), 032081, [online], <https://doi.org/10.1088/1742-6596/1533/3/032081> [accessed: 19.03.2025].
- Weidinger L. et al., *Ethical and social risks of harm from Language Models*, "arXiv.org" 2021, [online], <https://arxiv.org/abs/2112.04359> [accessed: 19.03.2025].
- WolneLektury.pl, [online], <https://wolnelektury.pl/katalog/lektura/pawlikowska-jasnorzewska-madama-butterfly.html> [accessed: 19.03.2025].
- Woo J.H., Choi H., *Systematic review for AI-based language learning tools*, "Diji'teol Keontencheu Haghoe Nonmunji/Dijiteol Kontencheu Hakoe Nonmunji" 2021, 22 (11), pp. 1783–1792, [online], <https://doi.org/10.9728/dcs.2021.22.11.1783> [accessed: 19.03.2025].
- Yan L. et al., *Practical and ethical challenges of large language models in education: A systematic scoping review*, "British Journal of Educational Technology" 2022, August 6, [online], <https://bera-journals.onlinelibrary.wiley.com/doi/10.1111/bjet.13370> [accessed: 19.03.2025].
- Zaman S., Dar H., Arshad S.S., *Assessing Students' Life Skills and their Sources of Learning*, "Review of Education, Administration and Law" 2023, 6 (2), pp. 167–179, [online], <https://doi.org/10.47067/real.v6i2.323> [accessed: 19.03.2025].
- Zheng S., Zhu S., *A study of computer aided translation based on artificial intelligence technology*, "Journal of Physics. Conference Series" 2020, 1646 (1), 012127, [online], <https://doi.org/10.1088/1742-6596/1646/1/012127> [accessed: 19.03.2025].