

The Evolution of Translation Practices: Comparing Traditional and AI-Assisted Techniques in Student Texts

Muhammad Zaki Pahrul Hadi, Issy Yuliasry, Hendi Pratama

^{1,2,3}Language Education Study Program, Universitas Negeri Semarang

Email: zakupahrulhadi@gmail.com^{1*}, issy.yuliasri@mail.unnes.ac.id²,
hendipratama@mail.unnes.ac.id³

Abstract

Artificial intelligence has revolutionized translation, making it more efficient and consistent. Yet, human oversight is still necessary to ensure accuracy, clarity, and cultural appropriateness. The present study examines the development of translation practices by comparing the use of Molina & Albir's translation techniques in traditional and AI-assisted student translations. The goal is to discover application patterns of these techniques, and to evaluate the effects of AI on translation strategies and results. The study applied a qualitative participatory research design involving ten students of English Literature from Universitas Bumigora in the sixth semester. Data collection was carried out by means of document analysis of translation assignments produced under two conditions – traditional translations and AI-assisted translations with ChatGPT, Google Translate and DeepL. For each translation, techniques applied were classified, their frequency and functional impact were analyzed. The findings show that Literal Translation (36.16%) and Modulation (35.03%) were the most frequently used among the conventional translations, which together accounted for more than 71% of the observed strategies. Other techniques like Reduction, Established Equivalent, Amplification, Transposition, Borrowing and Adaptation were also applied selectively. Literal Translation (23.12%) and Modulation (15.05%) remained the most frequent techniques in AI-assisted translations but the use of other techniques such as Established Equivalent, Transposition, Amplification and Description were more evenly distributed, which suggests the students' attempts to enhance the clarity, stylistic accuracy and contextual appropriateness of the AI output. The results suggest that traditional translation attaches more importance to literal fidelity and dynamic cognitive adaptation, while AI-assisted translation offers more structural consistency and requires students to focus on revising and improving the AI drafts.

Keywords: *Translation practices; traditional translation; AI-assisted translation; student translation; translation quality*

INTRODUCTION

The traditional translation practices have been drastically changed by the digital technology and especially by the advances in artificial intelligence (AI). Translation has traditionally been understood as a human activity that involves linguistic

ability, cognitive processing and the recognition of context and culture (Albir & Alves, 2009; Erton, 2020; Hartono, 2018). In this accepted method, translators resort to several translation techniques: literal translation, modulation, amplification, reduction and generalization in order to create equivalence between the source and

target texts (Rianti et al., 2021; Rus & Harpa, 2018; Zainudin & Awal, 2012).

These techniques testify to the translator's strategic choices in order to reach a balance between faithfulness, naturalness and communicative effectiveness (Burazer, 2013; Güldal & Tarakcioğlu, 2025; Yuliarsi et al., 2025).

However, the rise of AI-assisted translation tools has outpaced how translation happens, particularly in academic spaces with students. Advantages of AI systems such as efficiency, speed and consistency make them a desirable tool for translators (Hadi et al., 2024; Kapnas et al., 2025; Kunst & Bierwaczzonek, 2023). Therefore, for all such benefits, AI-assisted interpretation often relies heavily on structurally oriented techniques, most notably, a literal translation based on a direct correspondence of languages. This approach allows for consistency, but can lose meaning that can be revealed by context and culture (Wu et al., 2025; Zouhar et al., 2025). Meanwhile classical student translation seems to take a flexible balance on practical application of techniques. Human translators also adjust strategies based on context, employing techniques like modulation and established equivalent for clarification, and reduction and generalization to simplify a complex expression (Jibreel, 2024a, 2024b; Manapbayeva et al., 2024). This variation, however, indicates the impact of human cognition and interpretative judgment in the translation process. The use of reduction and generalization extenuates some component of rich semantics from source text which negatively impacts quality of transliteration (Ashraf & Ahmad, 2015a, 2015b; Hidayati, 2020).

The application of artificial intelligence (AI) in translation teaching has been a hot topic in recent years, with much focus on its revolutionary role in teaching methodology and student learning outcomes. Yuan et al. (2025) highlighted the potential of AI tools such as machine translation and adaptive learning systems to improve translation accuracy, tailor

learning experiences, and foster engagement, as well as challenges related to data privacy, ethics, and teacher training. Likewise, He (2025) investigated the transformation of translation teaching in the age of AI and proposed principles based on human-machine collaboration, competency development, and the infusion of humanistic values to fill the voids in the existing university curricula. Both studies emphasize the role of AI as a tool to support human expertise. They stress efficiency and structured outputs, while stressing the importance of critical thinking and cultural sensitivity.

Hadi et al. (2025) investigated English-Indonesian texts produced by EFL learners using AI-assisted tools in the context of student translation practices and found patterns in translation techniques and dominant translation ideologies. They report a predominance of Literal Translation and Modulation with a general tendency towards domestication, which reflects the students' preference for fluid and culturally adapted target-language outputs. Though the study was informative, it concentrated on AI-assisted translation and ideological tendencies and did not systematically compare with conventional, non-AI translation methods. The present research builds on these previous studies and fills a critical gap by directly comparing student translations produced conventionally (i.e. by human translators only) and by AI-assisted translators, using the framework of Molina & Hurtado Albir.

The primary goal of the study is to investigate and contrast the use of translation techniques by undergraduate students in a conventional (human-only) and AI-assisted environment, using Molina & Albir's framework. This study aims to shed light on the changing landscape of translation practices in educational environments, to highlight the interplay between technological assistance and human expertise, and to inform

pedagogical approaches in teaching translation in the digital age.

RESEARCH METHOD

The present study adopts a qualitative participative approach to examine the utilization of Molina & Albir's translation techniques by English Literature students in standard and AI-enhanced texts. Ten students of the sixth semester of Universitas Bumigora were chosen using purposive sample method considering their experience in translation and familiarity with AI tools so that they could give rich and relevant data. Data were acquired by examining translation tasks generated under two conditions: Traditional approaches without AI and AI-assisted translation utilizing tools like ChatGPT, Google Translate, and DeepL. Each tool has its own benefits from the contextually accurate outputs of ChatGPT to the natural fluency and stylistic precision of DeepL. Literal Translation, Modulation, Adaptation and Established Equivalent were some of the techniques identified in the document analysis with a focus on patterns, similarities and differences between the two approaches. This technique provides a glimpse of the practical application of formal translation methods by students and shines light on the impact of AI on translation methods, providing awareness of the shifting terrain of translation education in the digital era.

FINDING AND DISCUSSION

3.1. Implementation of Translation Techniques in Conventional Student Texts

Tabel 1. Translation technique using conventional method

No	Translatio n Technique	Total Frequen cy	Percenta ge
----	------------------------------	------------------------	----------------

1	Literal Translation	64	36.16%
2	Modulation	62	35.03%
3	Reduction	27	15.25%
4	Established Equivalent	6	3.39%
5	Amplification	5	2.82%
6	Transposition	4	2.26%
7	Borrowing	7	3.95%
8	Adaptation	2	1.13%
Tot al		177	100%

In our analysis of ten student texts translated by using standard translation procedures, we found some evident similarities in the application of Molina & Albir's translation methodologies. The most common technique was Literal Translation (n=64, 36.16%) out of the 177 recorded occurrences. This indicates that the students focused more on the surface structure of the source text by translating word for word or phrase for phrase.

The second most often occurring strategy was modulation and was used 62 times (35.03%). It shows that students consciously changed their perspective, attention or cognitive categories to make the meaning sound more natural in the target language. The overall techniques were almost 71.19% consisted of Literal Translation and Modulation. It indicates that students find a balance between faithfulness to the source material and functional alterations to ensure clarity and readability.

There were 27 instances of reduction (15.25%) which shows selective condensation or deletion of content to achieve conciseness in the target text. Less often utilized strategies were Established Equivalent (6 times, 3.39%), Amplification (5 times, 2.82%), Transposition (4 times, 2.26%) and

Borrowing (7 times, 3.95%), which revealed infrequent usage of idiomatic idioms, syntactic changes or incorporation of source-language terminology. Interestingly, the least used strategy was adaption, employed only 2 times (1.13%) and presented the least interference for the adaption of cultural or contextual in the traditional translation process. These results suggest that in standard translation students tend to employ the techniques of Literal Translation and Modulation, whereas the other strategies are used more selectively, depending on the individual needs of each text. This pattern shows a significant dependence on literal faithfulness and perspective shifts with minimal care for cultural or pragmatic adaptations.

3.2.Implementation of Translation Techniques in AI-Assisted Student Texts

Tabel 2. Translation Technique using AI assisted Method

N o	Teknik Penerjemah an	Frekue nsi	Persenta se
1	Literal Translation	43	23,12%
2	Modulation	28	15,05%
3	Established Equivalent	21	11,29%
4	Transposition	20	10,75%
5	Amplificatio n	14	7,53%
6	Description	12	6,45%
7	Generalizatio n	7	3,76%
8	Borrowing	7	3,76%
9	Particularizat ion	6	3,23%
10	Linguistic Amplificatio n	6	3,23%
11	Reduction	1	0,54%
	Total	186	100%

The analysis of 10 student texts translated from English to Indonesian with AI aid indicated several patterns in the implementation of Molina & Albir's translation theory. Of the total 186 recorded instances, Literal Translation was the most commonly used technique, with 43 occasions (23.12%). This means that even with the help of AI, students did mostly direct word-for-word or phrase-for-phrase translation, keeping the surface structure of the source text.

The second most strategy employed is Modulation, it is used 28 times (15.05%). It means that the students deliberately modified perspective, attention, or cognitive categories to make the meaning more natural in the target language. Literal Translation and Modulation together represented 38.17% of total AI-assisted translations, underscoring the equilibrium between fidelity and functional adaptation.

Other approaches used more frequently were Established Equivalent (21 cases, 11.29%) and Transposition (20 cases, 10.75%), which show the students' use of conventionalized phrases and changes in grammatical category to construct organic structures in the target language. The techniques of Amplification (14 occurrences, 7.53%) and Description (12 occurrences, 6.45%) were used to insert explanatory or descriptive content when clarification or elaboration was needed in the AI-generated output.

Generalization (7 occurrences, 3.76%), Borrowing (7 occurrences, 3.76%), Particularization (6 occurrences, 3.23%), Linguistic Amplification (6 occurrences, 3.23%), and Reduction (1 occurrence, 0.54%) were rarely used techniques. This shows that the interventions related to the lexical specificity, omission of information or subtle modifications were not frequent in the 10 texts. Analysis of these 10 student translations with AI assistance reveals that AI tools offer a base draft, but students intentionally use diverse translation strategies to improve meaning, clarity, and

language and cultural specifics. The most commonly used approaches are Literal Translation and Modulation, while additional techniques are used judiciously based on the specific requirements of the source text and the AI generated output.

DISCUSSION

The Use of Translation Technique in Conventional Translation Model

Before presenting the complete table of the translation strategies used by students in the traditional English-Indonesian translations, it is crucial to put the analysis in perspective. This study is based on the paradigm of Molina & Albir (2002) which outlines 18 translation approaches typically utilized to attain semantic, syntactic and pragmatic equivalency. This analysis aims to show how students deliberately combine these approaches to retain content, ease the reading process and accommodate linguistic and cultural variances in the target language.

An investigation of ten student translations follows the systematic patterns of the techniques of translation of Molina & Albir (2002) in the theoretical framework which establishes 18 strategies to achieve semantic, syntactic and pragmatic similarity. The most used strategies were Literal Translation (36.16%) and Modulation (35.03%) which accounted for about 71% of all used techniques, as found previously. This implies that the students were mostly using word-for-word or phrase-for-phrase translation, but at the same time they were also modifying sentence structure, viewpoint and focus to make their translations natural and readable in Indonesian. Below the table are instances of students' application of translation procedures by the traditional method:

Tabel 3. The Use of Translation Technique in Conventional Translation Model

N o	Source language	Target Language	Techniq ues
1	Investing in Quality Education for Economic Development, Peace, and Stability highlights the crucial role of education in society.	Investasi dalam kualitas pendidikan untuk perkembangan ekonomi, kedamaian dan kestabilan	Literal + Reduction
2	Education is the foundation of any functioning society.	Edukasi adalah pondasi dari fungsi apapun di masyarakat.	Literal + Modulati on
3	It enables individuals to live together harmoniously, engage in civic life, and support the economy.	Itu bisa berupa individu yang tinggal bersama dengan harmonis, mengikuti serta kehidupan kebangsaan, dan mendukung ekonomi.	Literal + Modulati on
4	Putting resources into education brings benefits not only to individuals but also to nations and the world.	Menempatkan beberapa sumber penghasilan ke dalam pendidikan akan membawa banyak manfaat bukan hanya untuk beberapa individu tapi juga negara.	Literal + Modulati on + Reduction

5	For individuals, learning increases job prospects, boosts income, and leads to better health.	Untuk beberapa individu, belajar dapat menaikkan job prospects, menambah pemasukan, dan membantu untuk mendapatkan kesehatan yang lebih baik.	Literal + Borrowing + Modulation
6	Nations that prioritize education at all levels—basic, intermediate, and higher—make strides in science and innovation and produce new inventions and technologies.	Negara yang memprioritaskan pendidikan di level rendah, menengah, dan tinggi dapat memperkuat langkah dalam pengetahuan dan teknologi.	Literal + Modulation + Reduction
7	On a global scale, supporting education helps strengthen social unity, drive economic development, enhance global competitiveness, and stimulate creative progress.	Dalam skala global, mendukung pendidikan dapat membantu untuk memperkuat unit sosial, menyetir perkembangan ekonomi, meningkatkan persaingan global, dan menggerakkan proses yang kreatif.	Literal + Modulation + Borrowing

The table presents a clear overview of the patterns of technique selection, showing that students mainly resorted to Literal Translation and Modulation in order to preserve meaning and achieve natural sentence flow, while other techniques were applied selectively to handle sentence complexity, idiomatic expressions and cultural nuances. The following examples exhibit various uses in context, emphasizing how each technique works to balance between semantic fidelity, readability and pragmatic adequacy, according to Molina & Albir's (2002) theoretical framework.

Literal Translation was employed extensively to conserve crucial content words. For example, "*Education is the foundation of any functioning society*" translated into "*Pendidikan merupakan pondasi bagi kehidupan sosial*". Here, as Molina & Albir describe for Literal Translation, the fundamental phrases *pendidikan* and *pondasi* were transferred literally, keeping semantic fidelity. We employed modulation for adjusting phrase viewpoint, focus, or category for natural target-language expression. For example: "*It enables individuals to live together harmoniously, engage in civic life, and support the economy*" translated into "*Pendidikan memungkinkan para individu untuk hidup bersama secara harmonis, ikut serta dalam kehidupan kemasyarakatan, dan mendukung ekonomi*".

Modulation changes the words of a phrase and alters the emphasis to create an idiomatic sentence, but with the same meaning. Longer sentences were condensed by the application of a reduction (15.25%). *Investing in Quality Education for Economic Development, Peace and Stability emphasizes the critical role of education in society*. Reduction is acceptable, but it misses the phrase "*highlights the crucial role of education in society*", which significantly lowers the accuracy and completeness of the message. Molina & Albir point out that too

much Reduction can undermine semantic integrity. Established Equivalent (3.39%) Ensures translation of expressions culturally or idiomatically known. “*Memungkinkan individu untuk terlibat dalam kehidupan sipil*”. This is classified as Established Equivalent because *ikut serta dalam kehidupan kemasyarakatan* is a common term in Indonesian which has the same meaning as the source. For Molina & Albir, Established Equivalent is to use terms already existing and accepted in the target language instead of translating word for word.

Amplification was utilized (2.82%) to make implicit elements clear. For example: “*Learning increases job prospects and income*” translated into “*Belajar dapat meningkatkan kesempatan kerja dan menambah pendapatan seseorang*”. The addition of *seseorang* explains the beneficiary, which makes it clearer and more comprehensive. This is in line with Molina & Albir’s definition of Amplification, i.e. the addition of items in the target text which are inferred but not specified in the source.

Transposition (2.26%) refers to the shifting of grammatical categories or sentence structure. For example, that is. “*Investing in education benefits not only individuals but countries and the planet*” translated into “*Berinvestasi dalam pendidikan menguntungkan tidak hanya individu tetapi juga negara dan dunia*”. Here the English subject-verb structure is rearranged to follow Indonesian syntax without altering the meaning, in line with Molina & Albir’s explanation of Transposition.

The (3.95%) of borrowing is when technical or culture-specific terminology are kept in the target text. For example: “For individuals, learning increases job prospects” was translated into “Untuk individu, belajar dapat meningkatkan job prospects”. The student has career possibilities to keep conceptual accuracy, in line with Molina & Albir’s recommendation that Borrowing is used

for phrases without acceptable target-language equivalents.

Adaptation (1.13%) was used to a minimum to adapt culturally constrained terms. For example, idioms or expressions that would sound odd if translated literally into Indonesian were changed to culturally similar phrasing. Molina & Albir explain that “Adaptation is replacing a source element with a target one that is contextually or culturally appropriate.” In this data set, Adaptation was seldom needed, suggesting that most statements could be translated using standard phrasing.

To sum up, the data indicate that students value Literal Translation and Modulation in order to maintain meaning and achieve fluency. Other strategies Reduction, Established Equivalent, Amplification, Transposition, Borrowing and Adaptation were used judiciously based on the intricacy of sentences, cultural content or stylistic requirements. Importantly, the use of Reduction requires discretion, as excessive reduction may damage correctness and clarity, validating Molina & Albir’s suggestion that translation process selection should balance fidelity, readability and pragmatic suitability.

The Use of Translation Technique in Conventional Translation Model

Tabel 4. The Use of Translation Technique in AI Assisted-Translation Model

N o	Source Language	Target Language	Translation Technique
1	Investing in Quality Education for Economic Development, Peace,	Investasi dalam pendidikan yang berkualitas merupakan kunci bagi pembangun	Transposition, Amplification, Literal Translation

	and Stability.	an ekonomi, perdamaian, dan stabilitas.		6	Nations that prioritize education at all levels basic, intermediate, and higher make strides in science and innovation, and produce new inventions and technologies.	Sementara itu, negara yang mengedepankan pendidikan di semua jenjang—dari dasar hingga tinggi—akan mengalami kemajuan di bidang ilmu pengetahuan dan teknologi, serta menciptakan inovasi.	Established Equivalent, Modulation, Amplification, Reduction, Literal Translation
2	Education is the foundation of any functioning society.	Pendidikan menjadi dasar utama bagi masyarakat yang berfungsi dengan baik.	Literal Translation, Amplification				
3	It enables individuals to live together harmoniously, engage in civic life, and support the economy.	Karena memungkin individu hidup rukun, berpartisipasi dalam kehidupan sosial, dan mendukung pertumbuhan ekonomi.	Modulation, Literal Translation, Amplification				
4	Putting resources into education brings benefits not only to individuals but also to nations and the world.	Mengarahkan sumber daya untuk pendidikan memberikan dampak positif tidak hanya bagi individu, tetapi juga bagi negara dan komunitas global.	Modulation, Amplification, Literal Translation	7	On a global scale, supporting education helps strengthen social unity, drive economic development, enhance global competitiveness, and stimulate creative progress.	Secara global, dukungan terhadap pendidikan memperkuat kohesi sosial, mempercepat pembangunan ekonomi, meningkatkan daya saing antarbangsa, dan mendorong kemajuan kreatif.	Transposition, Modulation, Established Equivalent, Literal Translation
5	For individuals, learning increases job prospects, boosts income, and leads to better health.	Bagi individu, pendidikan meningkatkan peluang kerja, pendapatan, dan kesehatan.	Generalization, Modulation, Reduction, Literal Translation	8	In a time of rapid social, technological, and economic change, investing in education is also important for building the	Di tengah arus perubahan sosial, teknologi, dan ekonomi yang berlangsung cepat, investasi dalam	Amplification, Modulation, Transposition, Description

	resilience of countries.	sektor pendidikan menjadi krusial untuk memperkuat ketahanan suatu negara.		necessary to protect economies from sudden shocks and rapidly changing labor markets.	pendidikan memainkan peran penting dalam menjaga stabilitas ekonomi dari berbagai guncangan tak terduga serta menghadapi dinamika pasar tenaga kerja yang terus berubah.	Description
9	As the Organization for Economic Cooperation and Development (OECD) highlights, “Investments in human capital can be a source of resilience over the long term and help ensure the well-being of future societies, especially in countries with large youth populations.”	Seperti yang ditegaskan oleh Organisasi untuk Kerja Sama dan Pembangunan Ekonomi (OECD), “Investasi pada sumber daya manusia dapat menjadi fondasi ketahanan jangka panjang dan berperan penting dalam menjamin kesejahteraan masyarakat di masa depan, terutama di negara-negara dengan jumlah penduduk muda yang besar.”	Established Equivalent, Modulation, Description, Linguistic Amplification, Literal Translation			
10	Studies by the World Economic Forum show that investing in education is	Hasil penelitian dari World Economic Forum juga menegaskan bahwa	Borrowing, Modulation, Amplification,			

The translation of the first sentence, “Investing in Quality Education for Economic Development, Peace, and Stability” into “Investasi dalam pendidikan yang berkualitas merupakan kunci bagi pembangunan ekonomi, perdamaian, dan stabilitas”, applies several translation techniques. Transposition is found in the change from the English gerund form *investing* into the Indonesian noun form *investasi*. This adjustment is necessary because Indonesian academic style often uses nominal forms to express concepts more naturally. Amplification appears in the addition of “merupakan kunci”, which is not explicitly stated in the source text. This addition clarifies the implied meaning that quality education is an important factor in achieving economic development, peace, and stability. Meanwhile, literal translation is used in the rendering of “economic development, peace, and stability” into “pembangunan ekonomi, perdamaian, dan stabilitas”, because the meaning is transferred directly without major structural or conceptual change.

In the second sentence, “Education is the foundation of any functioning society” is translated as “Pendidikan menjadi dasar utama bagi masyarakat yang

berfungsi dengan baik.” This translation mainly uses literal translation because the core meaning of the source sentence is preserved directly in the target language. The word “education” is translated as “pendidikan,” and “foundation” is translated as “dasar.” However, the translation also uses amplification through the addition of the word “utama.” The word *utama* strengthens the meaning of *foundation* and makes the statement sound more formal and emphatic in Indonesian. Therefore, the translation does not only transfer the literal meaning but also improves the academic tone of the sentence.

The third sentence, “It enables individuals to live together harmoniously, engage in civic life, and support the economy”, is translated as “Karena memungkinkan individu hidup rukun, berpartisipasi dalam kehidupan sosial, dan mendukung pertumbuhan ekonomi.” This sentence applies modulation, literal translation, and amplification. Modulation appears in the translation of “engage in civic life” into “berpartisipasi dalam kehidupan sosial.” The term *civic life* refers to public or citizenship-related participation, while *kehidupan sosial* gives a broader and more natural meaning in Indonesian. Literal translation appears in “enables individuals” translated as “memungkinkan individu” and “live together harmoniously” translated as “hidup rukun.” Amplification is used in “support the economy” becoming “mendukung pertumbuhan ekonomi,” because the word “pertumbuhan” is added to clarify that the support refers to economic growth.

The fourth sentence, “Putting resources into education brings benefits not only to individuals but also to nations and the world”, is translated as “Mengarahkan sumber daya untuk pendidikan memberikan dampak positif tidak hanya bagi individu, tetapi juga bagi negara dan komunitas global.” This translation uses modulation because the

phrase “putting resources into education” is not translated literally as *menaruh sumber daya*, but is rendered more naturally as “mengarahkan sumber daya untuk pendidikan.” This change makes the sentence more acceptable in Indonesian academic writing. Amplification is also used in the translation of “brings benefits” into “memberikan dampak positif.” The phrase *dampak positif* makes the meaning of benefit more explicit. Literal translation appears in the structure “not only to individuals but also to nations” translated as “tidak hanya bagi individu, tetapi juga bagi negara.”

In the fifth sentence, “For individuals, learning increases job prospects, boosts income, and leads to better health” is translated as “Bagi individu, pendidikan meningkatkan peluang kerja, pendapatan, dan kesehatan.” This translation applies generalization, modulation, reduction, and literal translation. Generalization appears in “job prospects” translated as “peluang kerja.” The English phrase *job prospects* can include career opportunities, future employment possibilities, and professional development, while *peluang kerja* gives a more general meaning. Modulation appears when “learning” is translated as “pendidikan.” The focus shifts from the process of learning to the broader concept of education. Reduction occurs in “leads to better health” translated simply as “kesehatan.” The idea of improvement expressed by *better* is not fully translated. Literal translation can be seen in “income” translated as “pendapatan.”

The sixth sentence, “Nations that prioritize education at all levels basic, intermediate, and higher make strides in science and innovation, and produce new inventions and technologies”, is translated as “Sementara itu, negara yang mengedepankan pendidikan di semua jenjang dari dasar hingga tinggi akan mengalami kemajuan di bidang ilmu pengetahuan dan teknologi, serta menciptakan inovasi.” This translation

uses established equivalent, modulation, amplification, reduction, and literal translation. Established equivalent appears in the translation of educational levels such as “basic, intermediate, and higher” into “dasar hingga tinggi,” which reflects commonly accepted educational terminology in Indonesian. Modulation is found in “make strides” translated as “mengalami kemajuan,” because the idiomatic English expression is changed into a more natural Indonesian academic expression. Amplification occurs with the addition of “Sementara itu,” which functions as a discourse marker to connect ideas. Reduction appears because “new inventions and technologies” is compressed into “menciptakan inovasi,” so some details from the source text are reduced. Literal translation is still present in parts such as “science” and “technology”, which are rendered as “ilmu pengetahuan” and “teknologi.”

The seventh sentence, “On a global scale, supporting education helps strengthen social unity, drive economic development, enhance global competitiveness, and stimulate creative progress”, is translated as “Secara global, dukungan terhadap pendidikan memperkuat kohesi sosial, mempercepat pembangunan ekonomi, meningkatkan daya saing antarbangsa, dan mendorong kemajuan kreatif.” This translation applies transposition, modulation, established equivalent, and literal translation. Transposition appears in “supporting education” translated as “dukungan terhadap pendidikan,” where the English gerund phrase is changed into an Indonesian noun phrase. Modulation occurs in “drive economic development” translated as “mempercepat pembangunan ekonomi.” The source text emphasizes the idea of driving or promoting development, while the target text shifts the viewpoint to accelerating development. Established equivalent appears in “global competitiveness” translated as “daya saing antarbangsa,” which is a familiar term in

Indonesian academic and policy discourse. Literal translation is used in “creative progress” translated as “kemajuan kreatif.”

The eighth sentence, “In a time of rapid social, technological, and economic change, investing in education is also important for building the resilience of countries”, is translated as “Di tengah arus perubahan sosial, teknologi, dan ekonomi yang berlangsung cepat, investasi dalam sektor pendidikan menjadi krusial untuk memperkuat ketahanan suatu negara.” This translation uses amplification, modulation, transposition, and description. Amplification appears in the translation of “rapid change” into “perubahan ... yang berlangsung cepat,” because the adjective *rapid* is expanded into a fuller explanatory phrase. Modulation occurs in “is also important” translated as “menjadi krusial.” The target text gives stronger emphasis than the source text. Transposition is found in “investing in education” translated as “investasi dalam sektor pendidikan,” changing the gerund form into a noun phrase. Description appears in “resilience of countries” translated as “ketahanan suatu negara,” because the abstract concept of resilience is expressed descriptively in relation to national strength and capacity.

The ninth sentence, “As the Organization for Economic Cooperation and Development (OECD) highlights, ‘Investments in human capital can be a source of resilience over the long term and help ensure the well-being of future societies, especially in countries with large youth populations’”, is translated as “Seperti yang ditegaskan oleh Organisasi untuk Kerja Sama dan Pembangunan Ekonomi (OECD), ‘Investasi pada sumber daya manusia dapat menjadi fondasi ketahanan jangka panjang dan berperan penting dalam menjamin kesejahteraan masyarakat di masa depan, terutama di negara-negara dengan jumlah penduduk muda yang besar.’” This sentence applies established equivalent, modulation, description, linguistic amplification, and

literal translation. Established equivalent is used in translating “Organization for Economic Cooperation and Development” into “Organisasi untuk Kerja Sama dan Pembangunan Ekonomi,” which is the accepted Indonesian equivalent for OECD. Modulation appears in “can be a source of resilience” translated as “dapat menjadi fondasi ketahanan.” The viewpoint shifts from *source* to *foundation*, making the expression more natural in Indonesian. Description is found in “resilience over the long term” translated as “ketahanan jangka panjang,” which clarifies the abstract meaning of resilience. Linguistic amplification appears in “future societies” translated as “masyarakat di masa depan,” because the phrase is expanded to improve clarity and fluency. Literal translation is also found in “large youth populations” translated as “jumlah penduduk muda yang besar.”

The tenth sentence, “Studies by the World Economic Forum show that investing in education is necessary to protect economies from sudden shocks and rapidly changing labor markets”, is translated as “Hasil penelitian dari World Economic Forum juga menegaskan bahwa pendidikan memainkan peran penting dalam menjaga stabilitas ekonomi dari berbagai guncangan tak terduga serta menghadapi dinamika pasar tenaga kerja yang terus berubah.” This translation uses borrowing, modulation, amplification, and description. Borrowing appears because “World Economic Forum” is retained in English rather than translated into Indonesian. Modulation occurs in “investing in education is necessary” translated as “pendidikan memainkan peran penting.” The source text emphasizes necessity, while the target text shifts the focus to the important role of education. Amplification is used in “sudden shocks” translated as “berbagai guncangan tak terduga,” where “berbagai” adds detail and emphasis. Description appears in “rapidly changing labor markets” translated as “dinamika pasar

tenaga kerja yang terus berubah,” because the target text explains the concept more descriptively and naturally in Indonesian.

The translation indicates that the translator does not depend solely on word-for-word rendering. Literal translation is used to maintain the main meaning of the source text, but other techniques, including modulation, amplification, transposition, and description, are also employed to produce a more natural, academic, and contextually suitable Indonesian version. Established equivalent is applied to ensure accuracy in translating institutional and educational terms, while borrowing is used for English terms that are already familiar in the target language context. As a result, the translation tends to be oriented toward the target language because it emphasizes clarity, readability, and academic appropriateness while preserving the essential message of the original text.

CONCLUSION

Ten student texts translated using traditional methods and ten AI-assisted English-to-Indonesian texts are compared in order to show the patterns in the implementation of Molina & Albir’s translation methodologies. In traditional translations, Literal Translation (36.16%) and Modulation (35.03%) were the most frequent procedures, comprising together nearly 71% of all used techniques. This suggests that students mostly applied word-for-word or phrase-for-phrase translation, and actively adjusted perspective and focus to successfully express meaning. Less frequently used strategies were Reduction (15.25%), Established Equivalent (3.39%), Amplification (2.82%), Transposition (2.26%), Borrowing (3.95%) and Adaptation (1.13%). Significantly, the use of Reduction was occasionally shown to undermine meaning accuracy and clarity, emphasizing the necessity for careful use

to prevent removing crucial information. Literal Translation (23.12%) and Modulation (15.05%) were still the most prevalent techniques in AI-assisted translations, but their share of overall techniques was less (38.17%), indicating a more even distribution of tactics. The techniques of Established Equivalent (11.29%), Transposition (10.75%), Amplification (7.53%) and Description (6.45%) were more frequent. This suggests that students were often required to improve meaning, specify stylistic subtleties, and modify textual items in the AI outputs. The less frequent procedures like Generalization, Borrowing, Particularization, Linguistic Amplification and Reduction imply minimum intervention for lexical or semantic adjustment. The data show that conventional translation balances literal accuracy and adaptation, while AI-assisted translation offers consistency and requires students to revise AI output. Both rely on Literal Translation and Modulation, but AI-assisted translation uses techniques more evenly. Student involvement remains essential to ensure accurate, clear, and culturally appropriate translations.

REFERENCES

- Albir, A. H., & Alves, F. (2009). Translation as a cognitive activity. In *The Routledge companion to translation studies* (pp. 68–87). Routledge.
- Ashraf, N., & Ahmad, M. (2015a). Machine translation techniques and their comparative study. *International Journal of Computer Applications*, 125(7). <https://doi.org/10.5120/ijca2015905955>
- Ashraf, N., & Ahmad, M. (2015b). Machine translation techniques and their comparative study. *International Journal of Computer Applications*, 125(7).
- Burazer, L. (2013). Examining the Differences in Assessing Quality of Translations and Acceptability of Texts. *ELOPE: English Language Overseas Perspectives and Enquiries*, 10(2), 127–137.
- Carton, I. (2020). Linguistic and cognitive aspects of translation and interpretation skills. *Journal of Language and Linguistic Studies*, 16(4), 1910–1920.
- Chüldal, B. K., & Tarakcıoğlu, A. Ö. (2025). A Suggestion of Translation Quality Assessment Model: Translation Errors and Preferences in Research Article Abstracts in the Context of Academic Translation. *Turkish Studies-Language & Literature*, 20(1).
- Hadidi, M. Z. P., Yuliasri, I., Pratama, H., & Yulianti, Y. (2024). Literacy in translation: between strategic competence and AI assistance. *Proceedings of Fine Arts, Literature, Language, and Education*, 830–839. <https://proceeding.unnes.ac.id/icoella/article/view/3788>
- Hadidi, M. Z. P., Yuliasri, I., Pratama, H., & Yulianti, Y. (2025). Exploring Translation Techniques and Ideological Tendencies in AI-Assisted English Indonesian Texts by EFL Learners. *International Journal of Learning, Teaching and Educational Research*, 24(10), 85–105. <https://doi.org/10.26803/ijlter.24.10.4>
- Hartono, R. (2018). *Translation Studies: The Cases in Indonesian Context*. Fakultas Bahasa dan Seni Universitas Negeri Semarang.
- He, K. (2025). Research on the Reform and Innovative Pathways of Translation Teaching in the Era of Artificial Intelligence. *English Language Teaching and Linguistics Studies*, 7(6), p185. <https://doi.org/10.22158/eltls.v7n6p185>
- Hidayati, N. N. (2020). Analysis of translation techniques, methods, and ideology on children's bilingual story books. *Alsuna: Journal of Arabic and English Language*, 3(2), 94–114. <https://doi.org/https://doi.org/10.31538/alsuna.v3i2.685>
- Libreel, I. (2024a). Translation Quality of Artificial Intelligence and Machine Translation Vs. Human Translation Utilizing MTPE Skills (An Empirical Study on Allusion Translation). *Journal of Social Studies*, 30(3), 46–72.

- Jibreel, I. (2024b). Translation Quality of Artificial Intelligence and Machine Translation Vs. Human Translation Utilizing MTPE Skills (An Empirical Study on Allusion Translation). *Journal of Social Studies*, 30(3), 46–72.
- Kapnas, D., Breskas, A., & Hansen-Schirra, S. (2025). Generative AI in School and Translator Education The influence of automatic text generation and machine translation on. *BOOK OF ABSTRACTS*, 41.
- Kunst, J. R., & Bierwiazzonek, K. (2023). Utilizing AI questionnaire translations in cross-cultural and intercultural research: Insights and recommendations. *International Journal of Intercultural Relations*, 97. <https://doi.org/10.1016/j.ijintrel.2023.101888>
- Manapbayeva, Z., Zaurbekova, G., Ayazbekova, K., Kazezova, A., & Pirmanova, K. (2024). AI in Literary Translation: ChatGPT-4 vs. Professional Human Translation of Abai's Poem 'Spring.' *Procedia Computer Science*, 251, 526–531. <https://doi.org/https://doi.org/10.1016/j.procs.2024.11.143>
- Molina, L., & Hurtado Albir, A. (2002). Translation techniques revisited: A dynamic and functionalist approach. *Meta*, 47(4), 498–512. <https://doi.org/https://doi.org/10.7202/008033>
- Rianti, R., Nugrahani, D., & Rahmawati, S. (2021). Translation technique and translation ideology analysis of Moana's utterances in Moana movie subtitle. *PROCEEDING OF ENGLISH TEACHING, LITERATURE AND LINGUISTICS (ETERNAL) CONFERENCE*, 1(1), 507–527. <https://conference.upgris.ac.id/index.php/etll/article/view/2744/1585>
- Rus, D., & Harpa, E. (2018). Technical vs. general translation practices and methods: a comparative study. *Procedia Manufacturing*, 22, 840–847. <https://doi.org/https://doi.org/10.1016/j.promfg.2018.03.119>
- Vu, C., Yu, H., Moorhouse, B. L., & Wu, M. (2025). Unveiling students' experiences and perspectives of generative AI-assisted translation in a Hong Kong university: Perceived benefits, limitations, and suggestions. *Digital Applied Linguistics*, 2, 102600. <https://doi.org/https://doi.org/10.29140/dal.v2.102600>
- Xuan, S., Zheng, H., & Lin, J. (2025). Innovations and Transformations in English Translation and Interpreting Education in the Age of Artificial Intelligence. *2025 5th International Conference on Artificial Intelligence and Education (ICAIE)*, 755–759.
- Yuliarsi, I., Purwanto, B., Hadi, M. Z. P., Rochmahwati, P., Rifqi, M., Arum, K., Kumara, D., Ma'sumah, F., & Dwi Nurcahyo, A. (2025). Student poetry translations with and without the use of AI: An evaluation of translation quality. *LITE: Jurnal Bahasa, Sastra, Dan Budaya*, 21. <https://doi.org/10.33633/lite.v21i2.14336>
- Zainudin, I. S., & Awal, N. M. (2012). Translation Techniques: Problems and Solutions. *Procedia - Social and Behavioral Sciences*, 59, 328–334. <https://doi.org/10.1016/j.sbspro.2012.09.282>
- Zouhar, V., Kocmi, T., & Sachan, M. (2025). AI-Assisted Human Evaluation of Machine Translation. *ArXiv Preprint ArXiv*. <https://doi.org/https://doi.org/10.48550/arXiv.2406.12419>Focustolearnmore