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RESEARCH ARTICLE

Adaptation and Attitudes Towards Technological Innovations: Assessing the Perceptions of Senior Lecturers on Artificial Intelligence (AI) in Translation Post-Editing

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ABSTRACT

Use of technology has revolutionized the practice of translation, providing translators and teachers with sophisticated approaches and tools to facilitate their translation work. Post-editing as an aspect of translation is not exempted from the influence of Artificial Intelligence (AI) technologies. Whereas AI technologies have been shown to address numerous challenges in the translation industry, it is important to understand the perceptions of relevant stakeholders regarding the integration of AI in translation post-editing. Hence, the current research is focused on the investigation of the adaptation and attitude of senior lecturers towards AI in translation post-editing. Using a quantitative method, the research utilized an online questionnaire to generate study data. One-hundred and ten (110) participants, comprising of senior lecturers from different universities, were sent the study questionnaires to share their opinions on the integration of AI in translation post-editing. The selection of senior lecturers as the target participants for this study was based on the fact that they have considerable years of experiences in the translation industry. Additionally, these senior lecturers have seen the progression of the translation sector throughout time, rendering them adequately qualified to provide insights on the integration of artificial intelligence (AI) in the field. The data generated from the responses of these stakeholders were analyzed based on the two research questions using a descriptive statistics method. The research findings highlighted the relevance of AI tools in enhancing post-editing machine translation. The findings from the research show that the positive attitudes of the research participants are indicative of their acceptance and integration of AI tools in translation post-editing. Although majority of the lecturers maintained a neutral stance in terms of ethical and professional issues associated with the usage of these tools, it can be inferred that they encourage the integration of AI tools in translation post-editing.

INTRODUCTION

The integration of Artificial Intelligence (AI) in translation, specifically machine translation, has brought notable changes to the industry over the past years. With AI in machine translation sector, translation pedagogy and methodologies are enhanced with the use of technological tools. Jadallah et al. (2023), traced the emergence of AI tools in the translation industry to a growing need to enhance the efficiency and output of translation processes, therefore, exerting pressure on industry professionals to improve speed and productivity, hence the introduction of machine translation. Historically, machine translation techniques have consistently generated translated text that needs modifications to get the desired level

of accuracy and reliability. This is due to the inherent intricacies of the human linguistic system (Zhao, 2020). The process of enhancing the translated information generated by machine translation is often known as Translation Post-Editing (TPE) in technical terms. Nevertheless, during the process of post-editing machine-translated texts, the primary objective is to improve the overall level of precision, correctness, and linguistic fluency while preserving the intended meaning of the original text (Yves 2019, Yu, 2021).

Post-editing is a widely recognized practice in the field of machine translation. When translators make edits to translations generated by automated systems, as opposed to creating translations entirely from scratch. Previous research has shown that the use of this approach has the potential to enhance productivity and elevate the quality of translations (Koponen, 2015), especially in cases when the original translations are of high quality. Nevertheless, the process of post-editing of lengthier contents may need a greater cognitive effort to detect problems and strategize in order to ensure high quality of the final translated text, Koponen (2015).

Although, several research studies have shown that the productivity of professional translators may be enhanced by post-editing high-quality machine translation (MT) as compared to the traditional method of manual translation without the use of MT (Jia & Sun, 2022). Since some translators have a negative disposition towards machine translation post-editing, O'brien (2002), argues that these translators are likely without proficiency in post-editing. Nevertheless, it is worthy to note that there are other factors (attitudes and adaptation) that can instigate this negative disposition, which is what this research aimed to explore.

2. LITERATURE REVIEW

Post-editing is a very promising paradigm in the field of translation. Interestingly, various scholars have explored post-editing and other factors that surround its concept. Contributing to the literature already available on the concept of post editing, this section is dedicated to discussing relevant issues pertaining to post-editing, aligning with the thoughts of other scholars concerning the said concept.

2.1. Emergence of Artificial Intelligence (AI) in the Translation

The presence of Artificial Intelligence (AI) in the translation industry has paved way for improved translation practices and efficiency in teaching translation. Nevertheless, translators are now required to use technologies to speed up their work and ensure high quality outcome of their translated work. Tracing the emergence of AI in the translation industry, Jadallah et al. (2023), maintained that it was instigated by a growing need to enhance the efficiency and output of translation processes, therefore exerting pressure on industry professionals to improve its speed and productivity (Stasimioti & Sosoni, 2020; Tao & Wang, 2022).

On the other hand, Shiwen & Xiaojing (2014), put forward that the inception of AI in translation may be traced back to the mid-20th century, during which the first development of rule-based machine translation systems took place. The aforementioned systems, which operate based on linguistic rules and dictionaries, have the objective of translating text from one language to another. This is achieved by analyzing sentences into their constituent grammatical parts and then reconstructing them in the target language. The Georgetown-IBM MT project and similar early efforts played a vital role in establishing the first stages of AI-powered translation (Qing, 2022; Wang, 2023). Nevertheless, it is worth noting that these systems often generated translations that were basic and prone to errors, therefore, underscoring the intricate nature of language comprehension, Charoenpornsawat et al. (2022).

Nevertheless, the translation industry saw a notable transformation with the introduction of Statistical Machine Translation (SMT) throughout the latter part of the 20th century. Rather than only depending on pre-established rules, SMT systems started using extensive multilingual corpora and statistical models. The use of a data-driven methodology has facilitated the ability of AI systems to effectively

discern and comprehend patterns and correlations among words and phrases across many languages, Shiwen & Xiaojing (2014).

In recent years, there has been an increased focus on the development of hybrid machine translation (MT) techniques, which aim to harness and integrate the advantages of statistical models and language norms. In the last two decades, there has been a notable decline in the prominence of rationalist perspectives. This has led to a growing interest in exploring more comprehensive language representations that may be effectively used in machine translation (Wei, 2020; Xiao & Martin, 2020).

The evolution of Artificial Intelligence (AI) in translation industry has shown that there has been improvement in both translation tools and methodology. The occurrence of this phenomenon has given rise to new prospects for interpersonal and corporate communication and collaboration among individuals and organizations from different linguistic and cultural backgrounds, thus fostering increased global interconnectedness and understanding (Liu, 2022, De-Cespedes, 2020, Jiang and Lu, 2020, Zhao, 2020).

2.2. Post-editing in Translation: An Overview

Translation practice involves the process of transferring the intended meaning of a source language, such as Chinese into English. The primary function of a translator is to effectively communicate the intended message of the source language into the target language via precise representation of the vocabulary and syntactic framework of the original text (Yu, 2021; Zheng & Zhu, 2020). Nevertheless, it is important that translators go extra mile ensuring that the translated text is infallible. At this junction, post-editing is employed.

Dorst et al. (2022) described post-editing in machine translation (MT) as a substantial process that entails thorough examination, review, and improvement of mechanically translated texts. This definition aligns with that of Jadallah et al. (2023). The scholarly work views post-editing as a widely used practice in the field of machine translation, whereby translators undertake the task of correcting translations generated by automated processes, as opposed to generating translations from scratch via human means. Meanwhile, post-editing is often carried out by professional editors in translation or skilled language experts who have the necessary knowledge of both the source and target languages. According to Charoenpornsawat et al. (2022), the primary responsibilities of translation post editors encompass rectifying syntactic inaccuracies, enhancing the coherent structure of expressions, and modifying expressions that possess unclear or unrelated meanings. Koponen (2016) further argued that the multifaceted and complicated nature of the responsibilities of translation post editors is characterized by the incorporation of several abilities and tactics in order to accomplish the relevant assignments.

Previous research has shown that the use of this post-editing practice has the potential to enhance productivity and elevate the quality of translation tasks, especially in cases where the original translations exhibit a high level of proficiency (Liu 2022, Koponen, 2016, Dorst et al. 2023). Supporting this notion, Wang (2023), maintained that when the first machine translations exhibit a high level of skill, post-editing emerges as a strategic phase within the translation process. The use of machine translation (MT) enables human translators to concentrate on enhancing the translation quality by guaranteeing its naturalness, correctness, and consistency. This approach also offers the advantages of increased efficiency and cost-effectiveness. Moreover, the integration of computer aid and human experience in post-editing may result in translations that exhibit both superior quality and enhanced efficiency.

Meanwhile, post-editing is characterized by many processes. According to Rossi & Carre (2022), the processes of post-editing in translation include the involvement of skilled editors who use their linguistic, technical, and cultural proficiencies to produce a definitive translation that is both linguistically precise and culturally appropriate. According to Jia and Sun (2022), the intricacies associated with post-editing machine translation (MT) arise from a multitude of circumstances. These circumstances or factors include quality of the original text, language proficiency, subject matter expertise, cultural sensitivity,

and project-specific criteria. The complexities involved in translation projects may exhibit substantial variations, therefore presenting post-editing as a task that is both demanding and subject to change. Achieving effective post-editing requires a harmonious integration of several competencies, including flexibility and a comprehensive understanding of the particular environment in which it is implemented, Dorst et al. (2023).

2.3. Artificial Intelligence (AI)-Powered Tools for Machine Translation (MT) Post-Editing

The emergence of AI-powered tools for post-editing machine translation (MT) is a noteworthy advancement within the translation and localization domain. These technologies use Artificial ntelligence(AI) and natural language processing to aid human translators during the post-editing phase, with the goal of optimizing the workflow, increasing productivity, and elevating the overall quality of translations.

Meanwhile, Jadallah et al. (2023) categorized these tools into three types. The study described quality assessment tools as the tools used for evaluating and quantifying the quality of translations, including those produced by machine translation (MT) systems. They assist in the identification of mistakes, inconsistencies, and places in need of repair. Although several AI-powered translation systems discussed earlier include quality assessment capabilities, where dedicated solutions specifically built for the purpose of quality evaluation do exist. Nevertheless, they include TAUS (Translation Automation User Society), DQF (Dynamic Quality Framework), MQM (Multidimensional Quality Metrics), LQR (Language Quality Review), among others. Agencies and organizations who frequently use these tools are language service providers, translation firms, and organizations to guarantee the production of translations of superior quality.

Another category of AI-powered post-editing tools is error detection tools. According to Jadallah et al. (2023), the purpose of error detection tools is to automatically detect and highlight mistakes, discrepancies, or possible problems in translated material, thereby enabling human post-editors to concentrate their efforts on rectifying and enhancing the translations. These errors include several aspects such as grammar, syntax, and consistency. On the other hand, Yu (2021) claimed that error detection tools are very important Artificial Intelligence (AI)-powered post-editing tools that enhance the efficiency of the post-editing process via automated identification of faults and difficulties in translated material. They play a very important role in enhancing the overall quality of translations and aid human post-editors in their efforts to polish translations created by machines.

Furthermore, language quality assurance is another Artificial Intelligence (AI)-powered post-editing tool that incorporates both quality assessment and error detection features. According to Olohon (2019), quality assurance refers to a diverse range of processes and procedures that are used to verify the absence of mistakes in translated material, as well as to identify and rectify any problems that may already be present. Hence, quality assurance tools used in post-editing are software programs that assist translators and/or quality assurance managers in executing quality assurance processes. These tools include ErrorSpy, Xbench, SDLX, among others.

Despite the benefits of the use of these tools, there is skepticism on the propensity of these tools to replace human job. Makoushina (2007), argued that it is unlikely that machine translation will fully replace the human translators because some of these Artificial Intelligence (AI) tools require the human input in order to fully function well.

2.4. Gap in the Literature

Several studies have shown that Artificial Intelligence (AI)-powered tools for post-editing improve efficiency and productivity of translators. Nevertheless, the existing body of research has also focused on examining the technical elements of AI-assisted translation and its effects on the quality of translation. However, there is a noticeable lack of attention given to the viewpoints and experiences of senior

lecturers on the integration of AI technology into translation post-editing. The primary objective of this study is to fill the existing gap in scholarly literature by undertaking a comprehensive analysis of the adaption processes and attitudes shown by senior lecturers towards Artificial Intelligence (AI) in the context of translation post-editing.

2.5. Research Questions

The following are two research questions generated to guide the main objective of this research.

i.To what extent do senior lecturers adapt to the integration of AI in translation post-editing in their teaching practices?

ii.What are the attitudes of senior lecturers on the integration of AI-driven translation post-editing tools in their teaching and research practices?

3. RESEARCH METHODOLOGY

3.1. Research Approach

A quantitative approach was utilized to accomplish the main objective of this study. The essence of adopting this approach is to be able to collate large and relevant data pertaining to the aim of the research. This is made possible through the engagement of one-hundred and ten (110) participants recruited for this research. However, the responses from them formed the basis of the research data.

3.2. Study Sample

The sample size utilized by the research is 110 senior lecturers, who are currently teaching translation related courses in various higher institutions. Meanwhile, these participants, who were also randomly selected were recruited through the use of various online channels like social media and online forums. The table below is the representation of the demographic variables of the research participants.

Table 1: Demographic Variables

Category	Variables	Frequency	Percentage
Gender	Female	50	45.45%
	Male	60	54.55%
Age	Less than 40years	10	9.09%
	41-50years	22	20.00%
	51-60years	37	33.64%
	61-70years	31	28.18%
	71 years above	10	9.09%
Years of Experience	Less than 5 years	15	13.64%
	5-10 years	28	25.45%
	11-15 years	27	24.55%
	More than 15 years	40	36.36%

Academic Qualification	Bachelors	7	6.36%
	Masters	25	22.73%
	PhD	78	70.91%
Academic Rank	Professor	25	22.73%
	Associate Prof.	30	27.27%
	Assistant Prof.	35	31.82%
	Lecturer	20	18.18%

Summary of the demographic information of the respondents are listed below.

i. The participants for the study consist of 60 male and 50 male senior lecturers.

ii. Out of the 110 research participants, more than 30% of them are within the age range of 51- 60 years. Nevertheless, those within this age range are more in number as compared to other groups. Those who are less than 40 years are 10 in number. This is also same with those who fall within the age range of 71 years and above.

iii. The total number of the participants with less than 5 years of experience in their field is less than 15%, while those with more than 15 years of experience are 36.36%.

iv. Meanwhile, large numbers (more than 50%) of the respondents are PhD holders. While those with bachelor's degree are 6.37%, and those with master's degree are 22.73%.

v. Finally, academic ranks of the participants include professor (22.73%), associate Prof (27.27%), assistant Prof, and lecturer (18.18%).

3.3. Study Tools

The current research utilized an online questionnaire for the purpose of collating research data. However, this questionnaire which is based on 5-point Likert-scale was distributed to the research participants in order to share their opinions towards survey items contained in the questionnaire. Meanwhile, the survey instrument is composed of three essential components. The first phase of the study identified the demographic factors. The second section of the survey corresponds to the main objective of the study. However, this section was further subcategorized into two. The first part analyzed the extent to which senior lecturers adapt to the integration of AI in translation post-editing in their teaching practices. The last component of the research examines the attitudes of senior lecturers on the integration of AI-driven translation post-editing tools in their teaching and research practices.

3.4. Method of Data Analysis

The research made use of statistical techniques such as the use of charts and tables. However, descriptive statistics table was employed to assess the data made available by the participants in response to the various questionnaire prompts. Moreover, the research also utilized acceptability status, wherein a survey item is accepted on the basis of high agreement among the respondents. Acceptability is determined by a significant disparity between the number of respondents who accept a statement and the combined number of those who provide neutral or rejected replies. The grounds for refuting a statement arise when the quantity of respondents who contradict the assertion significantly surpasses

the combined total of respondents who accepted the claim and those who remained indifferent. Nevertheless, an expression may be deemed indeterminate when the quantities for refutation and acceptance are equivalent, or when the numerical value of either refutation or acceptance is not greater than the other when coupled with neutral values.

3.5. Data Presentation and Analysis

This section focusses on analyzing the responses of the respondents with regard to the below-given research survey provided to them. However, descriptive statistics tables would be used to compute the data generated for this research.

A. To what extent do the senior lecturers adapt to the integration of Artificial Intelligence (AI) in translation post-editing in their teaching practices?

The survey items that are contained in the above research question are,

i. Do you frequently integrate AI driven translation tools into teaching of translation post-editing practices?

ii. ii.Is there a motivation behind your integration of AI in translation post-editing tools during translation pedagogy?

iii. iii.Do you align your teaching methods and curriculum with the use of these tools during the teaching of translation post-editing course?

iv. Do teaching the students with the integration of AI translation post-editing tools improve their performance in translation practice?

v. Are you often faced with any challenges when integrating AI-powered tools into your post-editing teaching practices?

Table 2: Adaptation of Senior Lecturers towards the Integration of Artificial Intelligence (AI) Translation Post-editing

Survey Items	SA	A	N	SD	D	Mean	St.D	Acceptability Status
Q1	20.00%	31.82%	16.36%	18.18%	13.64%	3.32	1.15	Accepted
Q2	27.27%	35.45%	10.91%	13.64%	12.73%	3.15	1.18	Accepted
Q3	25.45%	29.09%	14.55%	13.64%	17.27%	3.10	1.20	Accepted
Q4	30.00%	25.45%	19.09%	12.73%	12.73%	3.28	1.17	Accepted
Q5	18.18%	20.00%	23.64%	18.18%	20.00%	2.98	1.27	Neutral

The interpretation of the table is summarized below.

i. Based on the survey results pertaining to the first survey item, it can be seen that some lecturers (20.00% strongly agree and 31.82% agree) express a favorable inclination towards including AI-driven translation tools into their pedagogical approach for teaching translation post-editing methods on a regular basis. Nevertheless, it is important to acknowledge that a significant proportion of participants expressed a neutral stance (16.36%) or had dissenting views (18.18% and 13.64%), indicating a range of perspectives within the sample. The moderate standard deviation indicates that in case of a general inclination towards acceptance, there exists a degree of variability in the intensity of respondents' attitudes towards this integration. In general, the findings indicate a certain level of endorsement for the regular incorporation of AI technologies in this particular setting. Nevertheless, the high mean score indicates that the survey item is acceptable.

ii. In the second survey item, there are some lecturers (specifically, 27.27% strongly agree and 35.45% agree) who hold the belief that there exists a reason behind their integration of AI translation post-editing tools within the context of translation education. Nevertheless, it is important to acknowledge that a significant proportion of participants expressed a neutral stance (10.91%) or had dissenting views (13.64% and 12.73%), indicating a range of perspectives within the sample. The observed moderate standard deviation indicates that in case of a general inclination towards endorsing motivation, there is also a degree of variability in the intensity of respondents' beliefs towards this construct. The acceptability status of the item indicates that there exists a perception of the rationale for the use of artificial intelligence (AI) technologies in translation pedagogy.

iii. For the third survey item, the findings revealed that some lecturers (25.45% strongly agree and 29.09% agree) affirm that they effectively include AI technologies into their teaching techniques and curriculum while teaching a translation post-editing course. However, it is worth noting that a significant proportion of the participants expressed a neutral stance (14.55%) or disagreed (13.64% and 17.27%), indicating a wide range of perspectives among the respondents. The observed moderate standard deviation indicates that there is a general inclination towards endorsing alignment with their teaching methods and curriculum.

iv. There is a high level of agreement among the respondents regarding the fourth item. According to the survey's results, it is evident that some lecturers (30.00% strongly agree and 25.45% agree) hold the belief that teaching students using AI translation post-editing tools enhances their performance in the domain of translation practice. While 19.09% maintained neutral stance, 12.73% and 12.73% have dissenting views. The acceptability status of the survey item indicates a prevailing conviction in the beneficial effects of teaching students on the use of artificial intelligence (AI) technologies in translation practice.

v. The fifth item anchors on the challenges that are associated with the use of these tools. Meanwhile, the survey results pertaining to this item reveals that, on average, the participants do not exhibit a significant inclination towards agreement about the frequency of obstacles encountered when incorporating AI-powered technologies into their post-editing teaching methodologies. Some lecturers exhibit either a neutral stance or slight disagreement with the aforementioned assertion. Nevertheless, it is crucial to acknowledge that there exists a certain degree of variability in the answers, as shown by the standard deviation. This observed variance indicates that while the average value implies a propensity towards neutrality or disagreement, there exists a range of perspectives among the participants. In general, the findings indicate that a considerable number of participants do not identify notable obstacles in the integration of artificial intelligence (AI) technologies.

B. What are the attitudes of senior lecturers on the integration of AI-driven translation post-editing tools in their teaching and research practices?

The survey items that are contained in this research questionnaire include the following.

i.Does the utilization of AI-driven translation post-editing tools enhance the efficiency of your teaching and research practices?

ii. Does the integration of AI-driven translation post-editing tools positively impact your productivity as a senior lecturer?

iii.Do you feel satisfied with the outcome of practicing with these tools as you teach the students?

iv. Do you feel concern on ethical and professional issues associated with the use of these tools?

v.Based on your experiences, do you have more cautious and positive outlook on the integration of these tools?

Table 3: Result of Attitudes of Lecturers to AI in Translation Post-Editing

Survey Item	SA	A	N	SD	D	Mean	St.D	Acceptability Status
Q1	36.36%	47.27%	11.82%	1.82%	2.73%	3.12	1.19	Accepted
Q2	32.73%	28.18%	20.00%	10.00%	9.09%	3.55	1.15	Accepted
Q3	25.45%	28.18%	21.82%	14.55%	10.00%	3.35	1.17	Accepted
Q4	15.45%	18.18%	27.27%	20.92%	18.18%	2.64	1.30	Neutral
Q5	18.18%	20.00%	23.64%	18.18%	20.20%	2.94	1.27	Neutral

The interpretation of the above table is interpreted as given below.

i.From the result of the first item on the table above, majority of the respondents (36.36% strongly agree and 47.27% agree) affirm that they incorporate AI-driven translation post-editing tools into their teaching, and11.82% of the participants maintained a neutral stance, the remaining participants express disagreement (1.82% and 2.73%). The observed modest standard deviation indicates that there exists a propensity towards endorsing the notion of improved efficiency but accompanied by some degree of variability in the intensity of respondents' convictions on this idea. In general, the findings indicate that a significant number of participants have a favorable perspective on the use of AI-powered technologies to improve efficiency.

ii.Based on the survey results pertaining to the second question, it is evident that some lecturers (32.73% strongly agree and 28.18% agree) hold the belief that the use of AI-driven translation post-editing tools has a beneficial effect on their productivity in their roles as senior instructors. While a lesser fraction expresses disagreement (10.00% and 9.09%), the remaining 20% maintained a neutral stance. Additionally, the observed moderate standard deviation indicates that there exists a general inclination towards endorsing the notion of a beneficial influence on productivity. The acceptability status of the item further indicate that a significant number of participants have a favorable perspective about the influence on productivity.

iii.While more than 50% of the respondents express satisfaction with the results of using these technologies in their instructional practices for student learning, a lesser fraction expresses disagreement (14.55% and 10.00%). Nevertheless, it is essential to acknowledge that a significant proportion of participants remain neutral (21.82%). With the mean score of 3.35, indicating affirmation of the third survey item, the assertion is hence accepted.

iv. The survey results for the fourth item suggest that, on average, the participants hold a somewhat neutral viewpoint or exhibit a balanced stance when it comes to their degree of apprehension over the ethical and professional implications linked to the use of these instruments. This is based on the mean score and the acceptability status of the fourth item. In addition to that, the responses of the participants regarding the survey item fall within "Neutral" range on the Likert scale.

v.Based on the findings of the fifth survey results, it can be seen that the respondents, on average, possess a somewhat impartial or equitable perspective towards the assimilation of these instruments, as inferred from their personal encounters. The neutral perspective discussed here suggests that senior professors are likely to view the incorporation of AI-driven translation post-editing tools with a combination of caution and optimism, drawing from their own experiences. However, this observation may also suggest the presence of several influencing elements.

4. DISCUSSION

The essence of this research is to explore the adaptation and attitudes of senior lecturers towards Artificial

Intelligence (AI) in translation post-editing. In terms of the benefits of the integration of AI tools in translation post-editing practice, it has been observed that these technologies aid human translators during the post-editing phase, with the goal of optimizing the workflow, increasing productivity, and elevating the overall quality of translations. Post-editing in machine translation is a substantial process that entails thorough examination, review, and improvement of mechanically translated texts. On the other hand, post-editing is an important phase in translation practice, which can be said to determine the end-product of translated work.

Without disputing what other researchers (Jadallah et al. 2023 and Charoenpornsawat et al. 2022) has established regarding AI translation post-editing tools, some observations have been made in terms of the perspectives of senior lecturers on post-editing and use of AI tools for this practice.

In terms of adaptation, the responses of these lecturers show that they make use of these tools. However, the essence of adapting to these technologies while teaching students on translation post-editing is to equip them with post-editing skills, which is also in high demand. Study conducted by McElhaney & Vasconcellos (1988) provided reasons to support the idea of providing training to translators in the role of post-editors. The authors contend that a translator has the highest level of proficiency in recognizing linguistic inaccuracies, possesses a wealth of information about the transference of thoughts across different languages, and possesses the necessary technical resources to do their tasks with optimal efficiency.

Another important finding discovered in the analysis of the first research question is the 'motivation behind the integration of these tools while teaching post-editing courses. According to Jiang (2022), one of the core reasons for integration of AI in translation education is because of its potential benefits, both for students and translation teachers. While teaching students on the use of these tools and aids in translation, the students acquire skills successfully. It is also beneficial to translation educators as it increases their productivity. On the other hand, alignment to industry demands is another factor that can motivate lecturers to integrate these tools in their teaching. Meanwhile, adaptation of these tools goes beyond incorporating these tools while teaching post-editing courses, aligning their teaching methods to accommodate AI tools.

In terms of challenges encountered while adapting to these tools, it can be observed that the participants' responses were on the neutral stance. The possible reason for this response can be traced to differences in experience of these tools. Those who have positive outcome with the use of these tools are likely to have lesser challenges compared to those with negative outcome.

The findings from the second research question show that the positive attitudes of the research participants are on the high side. Although, majority of them maintained a neutral stance in terms of ethical and professional issues associated with the usage of these tools. Ethical and professional issues in this context include factors including stereotypes in the use of these tools, privacy, and job replacement of translation jobs by these tools, among others. Nonetheless, this neutral stance suggests that senior lecturers may possess distinct experiences and degrees of preparedness in relation to the adoption and use of AI-driven tools.

Conclusively, the effective incorporation of AI-driven translation post-editing tools in language and translation education is contingent upon the interplay of motivation and adaptability. These many elements collaborate to maximize the advantages of AI technologies, improve effectiveness, and equip students for the dynamic realm of language technology and AI within the discipline.

5. **CONCLUSION**

Post-editing is a commonly used technique within the domain of machine translation, whereby translators modify translated tasks produced by automated systems, rather than generating translations from start. However, during post-editing machine-translated texts, the main goal is to enhance the general accuracy, correctness, and grammatical fluency while maintaining the intended sense of the

original text. Through the use of a quantitative method, the research utilized an online questionnaire to generate study data. One-hundred and ten (110) participants, comprising of senior lecturers from different universities were sent the study questionnaire to share their opinions on the integration of Artificial Intelligence (AI) in translation post-editing. The selection of senior lecturers as the target participants for this research was based on the fact that they have considerable years of experiences in the translation industry. Additionally, senior lecturers have seen the progression of the translation sector throughout time, rendering them adequately qualified to provide insights on the integration of Artificial Intelligence (AI) in the field. The data generated from the responses of these stakeholders were analyzed based on the two research questions using a descriptive statistics method. The current research has shown that adaptation towards these tools do not only equip translation students with in-demand post-editing skills but increases the productivity of those who teach translation courses (especially on post-editing). The research findings highlighted the relevance of AI tools in enhancing post-editing machine translation. The findings from the research show that the positive attitudes of the research participants are indicative of their acceptance and integration of AI tools in translation post-editing. Although majority of the lecturers maintained a neutral stance in terms of ethical and professional issues associated with the usage of these tools, it can be concluded that they encourage the integration of AI tools in translation post-editing.

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REFERENCE

Abualrish, M. A., & Khasawneh, M. A. (2024). Using social media as a platform of communication between school administration and the local communities to promote inclusive education for children with special needs. *Studies in Media* and Communication, 12(2), 79. https://doi.org/10.11114/smc.v12i2.6560

Aburezeq, I. M., Dweikat, F. F., Al-Shaar, A. S., & Khasawneh, M. A. S. (2022). Case Study on the Dissemination of Radicalism on social media. *Information Sciences Letters, 11(6)*, pp. 2339–2343. DOI: http://dx.doi.org/10.18576/isl/110640

Ahmad Saleem Khasawneh, M. (2024). The efficacy of a programmed utilizing digital learning technology in fostering the life skills of students with learning disabilities. *International Journal of Learning, Teaching and Educational Research*, *23*(4), 18-33. https://doi.org/10.26803/ijlter.23.4.2

Al Kasey, A.A.M., Al-Omari, A.K., Khasawneh, M.A.S., ...Khairy, M.A.Y., Al-Asmari, S.M.S.(2023).The reality of distance learning skills among general education teachers from the point of view of supervisors and school principals. Information Sciences Letters, 12(3), 1533-1547. https://doi.org/10.18576/isl/120340

Al Sabi, Y. N., Jaradat, S. A., Ayasrah, M. N., Khasawneh, M. A. S., & Al Taqatqa, F. A. S. (2022). Shyness and its Relation with Self-esteem in Light of Some Variables. *Information Sciences Letters*, *11*(6), 2345-235. https://doi.org/10.18576/isl/110641

Alanazi, A. S., Almulla, A. A., & Khasawneh, M. A. (2023). Evaluating the effects of integrating cognitive presence strategies on teacher attitudes and student learning outcomes in special education and autism classrooms. *International Journal of Special Education (IJSE)*, *38*(2), 80-89. https://doi.org/10.52291/ijse.2023.38.24

Alanazi, A. S., Almulla, A. A., & Khasawneh, M. A.S. (2023). Exploring the E-learning supporting systems for students with special needs. *Revista de Gestão Social e Ambiental*, *17*(7), e03917. https://doi.org/10.24857/rgsa.v17n7-0

Alelaimat, A. M., Baibers, H. S., & Khasawneh, M. A. (2023). Examining the impact of YouTube vlogging on communication skills in teens with speech and language disorders. *International Journal of Data and Network Science*, *7*(4), 2077-2082. https://doi.org/10.5267/j.ijdns.2023.10.100

Al-Gaseem, M. M., & Khasawneh, M. A. S. (2022). Action Research in Science Teacher Education Program:

Significance and Benefit According to the Students-Teachers' Assessments. *Przestrzeń Społeczna (Social Space)*, *22*(3), 97-113.

Al-Gaseem, M. M., & Khasawneh, M. A. S. (2023). Environmental Orientation for Art Teachers Education Program (EOATEP). *Journal of Higher Education Theory and Practice*, *23*(12), 209-223.

Alkhasawneh, T., Al-Shaar, A. S., Khasawneh, M.A.S.., Darawsheh, S., & Aburaya, N. (2022). Self-Esteem and its Relationship to some Demographic Variables among Students with Learning Disabilities. *Information Sciences Letters, 11(6),* pp. 1929–1936. http://dx.doi.org/10.18576/isl/110609

Alkhasawneh, T., & Khasawneh, M. A. (2024). The effect of using augmented reality technology in developing imaginative thinking among students with learning difficulties. *International Journal of Data and Network Science*, *8*(3), 1679-1688. https://doi.org/10.5267/j.ijdns.2024.2.019

Alkhawalde, M. A., & Khasawneh, M. A. (2024). Designing gamified assistive apps: A novel approach to motivating and supporting students with learning disabilities. *International Journal of Data and Network Science*, *8*(1), 53-60. https://doi.org/10.5267/j.ijdns.2023.10.018

Alkhawaldeh, M. A., Alwaely, S. A., Al Sabi, Y. N., Abueita, S. D., Alomari, N., Al Taqatqa, F. A. S., ... & Al-Shaar, A. S. (2023). Parents' role in gifted students' educational issues and development. *Information Sciences Letters*, *12*(3), 1215-1221. https://doi.org/10.18576/isl/120312

Alkhazaleh, M., Khasawneh, M. A. S., Alkhazaleh, Z. M., Alelaimat, A. M., & Alotaibi, M. M. (2022). An Approach to Assist Dyslexia in Reading Issue: An Experimental Study. *Social Space*, *22*(3), 133-151.

Almulla, A. A., & Khasawneh, M. A. S. (2024). The Role of Libraries in Raising the Efficiency of Students with Special Needs in Academic Performance from The Point of View of Teachers. *Revista de Gestão Social e Ambiental*, *18*(2), e04865-e04865.

Almulla, A. A., Khasawneh, M. A., Abdel-Hadi, S. A., & Jarrah, H. Y. (2024). Influence of non-linear storytelling in video games on cognitive development among students with learning disabilities. *International Journal of Learning, Teaching and Educational Research*, *23*(1), 84-97. https://doi.org/10.26803/ijlter.23.1.5

Alomari, M. A., Alqudah, R. A., Al Rub, M. A., Alqsaireen, E. M., & Khasawneh, M. A. S. (2023). The Role of Media in Educational Social Construction of Children with Special Needs. *Information Sciences Letters*, *12*(7), 2933-2940.

Alomari, M. A., Daradkah, S. A., Al Rub, M. A., Alqsaireen, E. M., & Khasawneh, M. A. (2023). Utilization of Multimedia Services in Libraries for Students with Disabilities. https://doi.org/10.18576/isl/120717.

Alqudah, H., & Khasawneh, M. A. (2024). Assessing cognitive flexibility: Quantitative insights into the impact of adaptive learning technologies in special education. *International Journal of Data and Network Science*, *8*(3), 1463-1470. https://doi.org/10.5267/j.ijdns.2024.3.019

Alqudah, H., Mohammad, F. S., Khasawneh, Y. J., & Khasawneh, M. A. (2024). Assessing the influence of parental involvement on the effectiveness of gamified early childhood education in Jordan. *International Journal of Data and Network Science*, *8*(3), 1977-1984. https://doi.org/10.5267/j.ijdns.2024.1.015

Alrishan, A. M. H., Alwaely, S. A., Alshammari, A. K., Alshammari, R. K., & Khasawneh, M. A. S. (2023). The impact of the Teacher's personality on the motivation of learning the English language among governmental school students in Saudi Arabia. *Information Sciences Letters*, *12*(3), 1223-1230.

Al-Rousan, A. H., Ayasrah, M. N., & Khasawneh, M. A. S. (2023). Psychological Stability and its Relationship to Academic Performance Among Secondary School Students. https://doi.org/10.18576/isl/120335

Alshahrani, B. F., & Khasawneh, M. A. (2024). Online professional development and cognitive growth: A quantitative analysis for special education educators. Journal of Infrastructure, Policy and Development, 8(8), 5240. https://doi.org/10.24294/jipd.v8i8.5240

Alsowait, M. M., Obeidat, S. S., Obeidat, L. M., Ayasrah, M. N., & Khasawneh, M. A. (2023). Aligning Translation: A guide for special education teachers and parents. *Studies in Media and Communication*, *12*(1), 102. https://doi.org/10.11114/smc.v12i1.6573

Alsowait, M. M., Obeidat, S. S., Obeidat, L. M., Ayasrah, M. N., & Khasawneh, M. A. (2023). Navigating the social media landscape: A guide for special education teachers and parents. *Studies in Media and*

Communication, *12*(1), 102. https://doi.org/10.11114/smc.v12i1.6573

Alsrehan, H., Alhrahsheh, R., AlOdwan, S. S., Nser, K. K., Darawsheh, S. R., Khasawneh, M. A.S, & Owis, M. Z. (2024). Virtual reality socialization groups on Facebook: A new frontier for children with social anxiety disorder. *International Journal of Data and Network Science*, *8*(2), 1229-1236. https://doi.org/10.5267/j.ijdns.2023.11.011

Altaher, A. M., AL-Obaidly, G. A., Al-badaineh, G., Kashoob, S. S., Hammouri, Q., & Khasawneh, M. A. (2024). The impact of leadership styles on project success: The mediating role of team collaboration. Journal of Project Management, 9(4), 485-492. https://doi.org/10.5267/j.jpm.2024.7.001

Alwaely, S. A., Almousa, N. A., Helali, M. M., Ali, R. M., Rashed, R. M., Mashal, A. A., Saleh, S. G., Darawsheh, S. R., & Khasawneh, M. A. (2024). Teacher-student rapport and gamified learning: Investigating the role of interpersonal variables in classroom integration. *International Journal of Data and Network Science*, *8*(2), 1319-1324. https://doi.org/10.5267/j.ijdns.2023.11.003

Alwaely, S. A., El-Zeiny, M. E., Alqudah, H., Alamarnih, E. F., Salman, O. K., Halim, M., & Khasawneh, M. A.S. (2023). The impact of teacher evaluation on professional development and student achievement. *Revista de Gestão Social e Ambiental*, *17*(7), e03484. https://doi.org/10.24857/rgsa.v17n7-022

Aspects of the Ayyubids patronage of Jerusalem 583 AH/ 1187 AD - 658 AH/ 1260 AD. (2023). *Information Sciences Letters*, *12*(6), 2699-2706. https://doi.org/10.18576/isl/120640

Baniawwad, A. H., Tarif, L. I. B., Rady, Y., Yousef, N. I., Soliman, M., Farag, H. A., ... & Khasawneh, M. A. S. (2024). Influence of Assistive Technology Training on Educators Performance in Saudi Special Education: With the Mediating Role of Educators Knowledge and Educators Self-Efficacy. *Eurasian Journal of Educational Research*, *110*(110), 1-17.

Chan, E. C. L. (2021). Post-editing neural machine translation output of wealth management text: challenges and the way forward.

Charoenpornsawat, P., Sornlertlamvanich, V., & Charoenporn, T. (2002). Improving translation quality of rule-based machine translation. In *COLING-02: machine translation in Asia*.

Cholewska, D. (2021, August). Machine translation post-editing (MTPE) from the perspective of translation trainees: Implications for translation pedagogy. In *Proceedings of machine translation summit XVIII: Users and providers track* (pp. 200-210).

Comparin, L. (2017). *Quality in machine translation and human post-editing: error annotation and specifications* (Doctoral dissertation).

Darawsheh, S. R., Al-Darabah, I. T., Bedaiwy, A. A., Gmach, I., Alfandi, A. A. A., Elsharkasy, A. S., ... & Khasawneh, M. A. S. (2023). Emotional Intelligence for English Students with Learning Disabilities in Light of Some Variables. https://doi.org/10.18576/isl/120327

Darawsheh, S. R., Asha, I. K., AbuSaif, R., Alhejoj, A. F., & Khasawneh, M. A. (2023). An outline of the professional quality of teachers who teach children with special needs. *Journal of Education and e-Learning Research*, *10*(3), 358-363. https://doi.org/10.20448/jeelr.v10i3.4711

De Cespedes, B. R. (2020). Beyond the margins of academic education: identifying translation industry training practices through action research. *Translation &Interpreting, The*, *12*(1), 115-126.

Dorst A.G., Santos Ângelo Salgado Valdez S. & Bouman H.M.C. (2022), Machine translation in the multilingual classroom: how, when and why do humanities students at a Dutch university use machine translation? Translation and Translanguaging in Multilingual Contexts 8(1): 49-66.

Dorst A.G., Valdez S. & Jongste D. (2023), Professional translators' and project managers' perceptions of machine translation and post-editing: a survey study. In: Castilho S., Caro Quintana R., Stasimioti M. & Sosoni V. (Eds.) *Proceedings of the new trends in translation and technology conference - NeTTT 2022.* Rhodes Island, Greece. 50-59.

Dorst, A. G., Valdez, S., & Jongste, D. (2022). Professional translators' and project managers' perceptions of machine translation and post-editing: a survey study. *New Trends in Translation and Technology 2022*, 50.

Hadhrami, A. S. A. L., Al-Amrat, M. R., Khasawneh, M. A. S., & Darawsheh, S. R. (2022). Approach to Improve Reading Skill of Students with Dyslexia. *Information Sciences Letters, 11(6)*, pp. 2333–2338. http://dx.doi.org/10.18576/isl/110639

Hanandeh, A., Al-Badaineh, G., Kilani, Q., Freijat, S. Y., Abualfalayeh, G., & Khasawneh, M. A. (2024). The effects of social media platforms in influencing consumer behavior and improving business

objectives. *International Journal of Data and Network Science*, *8*(4), 2333-2340. https://doi.org/10.5267/j.ijdns.2024.5.023

Hanandeh, A., Hammouri, Q., Tweijer, A. A., Kilani, Q., Abualfalayeh, G., & Khasawneh, M. A. (2024). Data-driven transformation: The influence of analytics on organizational behavior in IT service companies. *International Journal of Data and Network Science*, *8*(4), 2037-2046. https://doi.org/10.5267/j.ijdns.2024.7.005

Hanandeh, A., Qudah, M. A., Mansour, A., Al-Qudah, S., Abualfalayeh, G., Kilani, Q., & Khasawneh, M. A. (2024). The achievement of digital leadership sustainability and business performance through the implementation of business intelligence, artificial intelligence, and quality learning in private universities in Jordan. *Uncertain Supply Chain Management*, *12*(4), 2581-2586. https://doi.org/10.5267/j.uscm.2024.5.012

Harrathi, H., Hached, S., Zerai,Z, Khasawneh, M. A., & Tashtoush, M. A. (2024). The Effectiveness of Cognitive Activation Strategy in Developing Oral Classical Arabic Communication Competency Among Omani Students Course Journal of Statistics Applications & Probability, 13(5), 1431-1445. https://doi.org/10.18576/jsap/130502

Hazaymeh, W.A., Khasawneh, M.A.S.(2024). Examining the use of social media in teaching and learning foreign languages and the impact on students' speaking abilities. *Research Journal in Advanced Humanities*, 2024, 5(2), pp. 69–82

Huang, J., & Wang, J. (2023). Post-editing machine translated subtitles: examining the effects of non-verbal input on student translators' effort. *Perspectives*, *31*(4), 620-640.

Hutchins, W. J. (1995). Machine translation: A brief history. In *Concise history of the language sciences* (pp. 431-445). Pergamon.

Jadallah abed Khasawneh, Y., & Khasawneh, M. A. S. (2023). The Use of Artificial Intelligence in Improving Machine Translation Post-Editing, Insights from Translation Editors. *Journal of Namibian Studies: History Politics Culture*, *34*, 7123-7146.

Jafar, A. A. M., & Khasawneh, M. A. S. (2024). The Effectiveness of Sports Program Among Typical Children and Children with Disabilities. *Journal of Ecohumanism*, *3*(7), 2431-2437

Jarrah, H. Y., Bilal, D. A., Halim, M., Helali, M. M., AlAli, R. M., Alfandi, A. A., & Khasawneh, M. A. (2024). The impact of storytelling and narrative variables on skill acquisition in gamified learning. *International Journal of Data and Network Science*, *8*(2), 1161-1168. https://doi.org/10.5267/j.ijdns.2023.11.018

Jia, Y., & Sun, S. (2022). Man, or machine? Comparing the difficulty of human translation versus neural machine translation post-editing. *Perspectives*, *31*(5), 950-968.

Jiang, K., & Lu, X. (2020). Natural language processing and its applications in machine translation: A diachronic review. In *2020 IEEE 3rd International Conference of Safe Production and Informatization (IICSPI)* (pp. 210-214). IEEE.

Jiang, R. (2022). How does artificial intelligence empower EFL teaching and learning nowadays? A review on artificial intelligence in the EFL context. *Frontiers in Psychology*, *13*, 1049401.

Khasawneh, M. A. (2024). Academic integrity and the use of ChatGPT by EFL pre-service teachers. Journal of Infrastructure, Policy and Development, 8(7), 4783. https://doi.org/10.24294/jipd.v8i7.4783

Khasawneh, M. A. (2024). Accessibility matters: Investigating the usability of social media platforms for individuals with motor disabilities. Studies in Media and Communication, 12(2), 1. https://doi.org/10.11114/smc.v12i2.6615

Khasawneh, M. A. (2024). Assessing predictors of successful transition services for students with disabilities in Saudi Arabia. Journal of Infrastructure, Policy and Development, 8(11), 5650. https://doi.org/10.24294/jipd.v8i11.5650

Khasawneh, M. A. (2024). Developing social and emotional skills of students with learning difficulties using a digital learning program. Journal of Ecohumanism, 3(3), 1751-1763. https://doi.org/10.62754/joe.v3i3.3448

Khasawneh, M. A. (2024). Implementing adaptive learning technologies: Practical strategies for enhancing cognition in mathematics education. International Journal of ADVANCED AND APPLIED SCIENCES, 11(8), 111-118. https://doi.org/10.21833/ijaas.2024.08.012

Khasawneh, M. A. (2024). Performance assessment of the calculus students by using scoring rubrics in composition and inverse function. Applied Mathematics & Information Sciences, 18(5), 1037-

1049. https://doi.org/10.18576/amis/180511
Khasawneh, M. A. (2024). Practical approaches to technology-mediated formative assessment for middle school educators. Journal of Infrastructure, Policy and Development, 8(9), 5241. https://doi.org/10.24294/jipd.v8i9.5241
Khasawneh, M. A. (2024). Role of effective assessment in motivating students with learning difficulties in primary schools from teachers' perspectives in Abha. International Journal of Learning, Teaching and Educational Research, 23(7), 461-475. https://doi.org/10.26803/ijlter.23.7.23
Khasawneh, M. A. (2024). The levels of employing new information technology in school administration from the teachers' point of view. EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE, 550-569. https://doi.org/10.70082/esiculture.vi.755
Khasawneh, M. A. S. (2021). The Impact of Phonological Awareness in Improving Sequential Memory among Students with Learning Disabilities. *International Journal of Disability, Development, and Education*, 1-13. https://doi.org/10.1080/1034912X.2021.1995853
Khasawneh, M. A. S. (2021). The Level of Job Performance among Teachers of Learning Disabilities in the English Language During The COVID-19 Pandemic from Their Point of View. *International Journal of Contemporary Research and Review*, *12*(10),20449-20457. https://doi.org/http://ijcrr.info/index.php/ijcrr/article/view/924/947.
Khasawneh, M. A. S. (2021). The level of motivation among teachers of learning disabilities in the English language in light of the COVID-19 pandemic. *Social Science Learning Education Journal*, *6*(11), 642-651DOI: https://doi.org/10.15520/sslej.v6i11.2871
Khasawneh, M. A. S. (2021). Training program on developing reading skills in the english language among students with learning difficulties. *Revista EDUCARE-UPEL-IPB-Segunda Nueva Etapa 2.0*, *25*(1), 84-101. DOI: 10.46498/reduipb.v25i1.1466
Khasawneh, M. A. S. (2021a). An electronic Training Program on Developing the Written Expression Skills among a Sample of foreign language learners EFL who are at-risk for Learning disabilities during the emerging Covid-19. *Academy of Social Science Journal*, *7*(10), 1974-1982. DOI: HTTPS://DOI.ORG/10.15520/ASSJ.V7I10.2713
Khasawneh, M. A. S. (2021b). Attitudes of teachers of learning disabilities in English language towards the use of information technology in Irbid from their point of view. *Journal of Advances in Social Science and Humanities*, *7*(10), 1957-1966.DOI:10.15520/jassh.v7i10.661
Khasawneh, M. A. S. (2023). Exploring the influence of distant learning and MOOCs in foreign language lecturers' professional development.
Khasawneh, M. A. S. (2023). Factors Affecting the Improvement of Speaking Skills Among Jordanian EFL Learners. *Journal of Language Teaching and Research*, *14*(6), 1559-1568.
Khasawneh, M. A. S. (2023). Interpersonal Communication Model for Children with Special Needs. *Information Sciences Letters*, *12*(6), 2469-2474. https://doi.org/10.18576/isl/120623
Khasawneh, M. A. S. (2024). Analyzing the correlation between gender variation and technology adaptation in language learning among foreign language student**.** *Research Journal in Advanced Humanities*. https://doi.org/10.58256/5pmpxd51
Khasawneh, M. A. S. (2024). Assessing cognitive flexibility in adaptive learning technologies for special education. *Journal of Infrastructure, Policy and Development*, *8*(12), 5172
Khasawneh, M. A. S. (2024). Exploring the influence of gender variation on the use of language learning apps in foreign language skill improvement. Research Journal in Advanced Humanities. https://doi.org/10.58256/5pmpxd51
Khasawneh, M. A. S. (2024). The Impact of Self-Regulation-Based Strategies in Improving Learning Scientific Concepts Among Students with Learning Disabilities in the Intermediate Stage. *International Journal of Special Education*, *39*(2), 51-61.
Khasawneh, M. A. S. (2024a). Exploring how language learning platforms on Instagram and TikTok can facilitate collaborative foreign language learning experiences of undergraduates. *Research Journal in Advanced Humanities*, 2024, 5(3), pp. 174–187.
Khasawneh, M. A. S. (2024b). A Look at the impacts of the application of collaborative technologies in foreign language teaching; Insights from lecturers. *Research Journal in Advanced Humanities*, 2024, 5(3).
Khasawneh, M. A. S. (2024c). Analyzing the strategic effects of AI-Powered virtual and augmented reality

systems in English language education at the tertiary level. *Research Journal in Advanced Humanities*, 2024, 5(3), pp. 188–202

Khasawneh, M. A. S., & Al-Rub, M. O. A. (2020). Development of Reading Comprehension Skills among the Students of Learning Disabilities. *Universal Journal of Educational Research*, *8*(11), 5335-5341. DOI: 10.13189/ujer.2020.081135

Khasawneh, M. A., Ismail, S. M., & Hussen, N. (2024). The blue sky of AI-assisted language assessment: Autonomy, academic buoyancy, psychological well-being, and academic success are involved. Language Testing in Asia, 14(1). https://doi.org/10.1186/s40468-024-00318-9

Khasawneh, M.A.S.(2024). Investigating the use of video gaming technologies in enhancing language skills of FL students. *Research Journal in Advanced Humanities*, 2024, 5(2), pp. 55–68

Khasawneh, N. A. S., & Khasawneh, M. A. S. (2022). Linguistic Needs of Non-Native Students of Arabic Language at Saudi Universities. *International Journal of Language Education*, *6*(3), 245-253.

Khasawneh, Y. J. A., Alwaely, S. A., Khasawneh, M. A. S., Alkhasawneh, T., & Al-Barakat, G. A. M. (2024). Administrative Communications and its Impact on Increasing the Effectiveness of Managerial Decisions Among Secondary School Principals. *Eurasian Journal of Educational Research*, *111*(111), 108-121.

Khasawneh, Y. J. A., Jarrah, H. Y., Alsarayreh, R. S., & Khasawneh, M. A. S. (2023). The Role of Cloud Computing in Improving the Performance of School Principals. *Eurasian Journal of Educational Research*, *107*(107), 110-125.

Khasawneh, Y. J. A., Khasawneh, M. A. S., Alkhasawneh, T., Alwaely, S. A., & Al-Barakat, G. A. M. (2024). Using smartphone applications to administer the educational process. *Arts Educa*, *39*.

Khasawneh, Y. J., & Khasawneh, M. (2024). The role of social media in spreading the culture of volunteer work among university students. Studies in Media and Communication, 12(4), 201. https://doi.org/10.11114/smc.v12i4.6941

Khasawneh, Y. J., & Khasawneh, M. A. (2024). The impact of teacher attitudes and beliefs on the integration of Gamified learning: A study of key attitudinal variables. International Journal of Learning, Teaching and Educational Research, 23(10), 364-378. https://doi.org/10.26803/ijlter.23.10.17

Khasawneh, M. (2020). The effect of the spread of the new COVID-19 on the psychological and social adaptation of families of Persons with Disabilities in the Kingdom of Saudi Arabia. *Health Psychology Report*, *9*(3), 264-275. https://doi.org/10.5114/hpr.2020.99003

Khasawneh, M. (2024). The influence of Twitter hashtags in building supportive online communities for parents of children with special needs. Journal of Technology and Science Education, 14(3), 770. https://doi.org/10.3926/jotse.2537

Khasawneh, M. A. (2020). The extent of bullying against students with learning disabilities according to the age variable. *International Journal of Learning, Teaching and Educational Research*, *19*(6), 267-281. https://doi.org/10.26803/ijlter.19.6.16

Khasawneh, M. A. (2023). Digital inclusion: Analyzing social media accessibility features for students with visual impairments. *Studies in Media and Communication*, *12*(1), 71. https://doi.org/10.11114/smc.v12i1.65

Khasawneh, M. A. (2024). Accessibility matters: Investigating the usability of social media platforms for individuals with motor disabilities. *Studies in Media and Communication*, *12*(2), 1. https://doi.org/10.11114/smc.v12i2.6615

Khasawneh, M. A. (2024). Adapting multisensory techniques for dyslexic learners in English language learning: A case study approach. *World Journal of English Language*, *14*(5), 553. https://doi.org/10.5430/wjel.v14n5p553

Khasawneh, M. A. (2024). Beyond digital platforms: Gamified skill development in real-world scenarios and environmental variables. *International Journal of Data and Network Science*, *8*(1), 213-220. https://doi.org/10.5267/j.ijdns.2023.10.002.

Khasawneh, M. A. (2024). Evaluating the efficacy of tablet-based assistive technology in Saudi special education settings. *International Journal of Learning, Teaching and Educational Research*, *23*(6), 547-561. https://doi.org/10.26803/ijlter.23.6.25

Khasawneh, M. A. (2024). Investigating the impact of automated instruments used for assessing the writing skill: Perspectives of language E-lEarnErs. *Research Journal in Advanced*

Humanities, *5*(2). https://doi.org/10.58256/4fd2qt78

Khasawneh, M. A. (2024). Teacher opinions on the role of educational robots in enhancing programming skills among hearing-impaired students. *International Journal of Learning, Teaching and Educational Research*, *23*(5), 309-322. https://doi.org/10.26803/ijlter.23.5.16

Khasawneh, M. A. (2024). The challenges facing vocational education online from the teachers' perspectives. *Journal of Curriculum and Teaching*, *13*(2), 180. https://doi.org/10.5430/jct.v13n2p180

Khasawneh, M. A. (2024). The effect of a teaching program based on cloud computing in developing writing skills among autistic students. *International Journal of Data and Network Science*, *8*(4), 2163-2172. https://doi.org/10.5267/j.ijdns.2024.6.015

Khasawneh, M. A. (2024). The effectiveness of cloud computing in developing critical thinking skills among early childhood students. International Journal of Data and Network Science, 8(4), 2459-2468. https://doi.org/10.5267/j.ijdns.2024.5.012

Khasawneh, M. A. (2024). Verbal violence on social networking websites and its impact on students with disabilities from the parents' perspectives. *Studies in Media and Communication*, *12*(2), 321. https://doi.org/10.11114/smc.v12i2.6753

Khasawneh, M. A. S. (2023). The use of video as media in distance learning for deaf students. *Contemporary Educational Technology*, *15*(2), ep418. https://doi.org/10.30935/cedtech/13012

Khasawneh, M. A., & Alkhawaldeh, M. A. (2020). The effectiveness of phonological awareness training in treating deficiencies in auditory processing among children with learning disabilities among elementary cycle students in Saudi Arabia. *International Journal of Language Education*. https://doi.org/10.26858/ijole.v4i3.14758

Khasawneh, M. A., & Shawaqfeh, A. T. (2024). Breaking traditional boundaries in translation pedagogy; Evaluating how senior lecturers have incorporated digital tools to enhance translation teaching. *World Journal of English Language*, *14*(4), 154. https://doi.org/10.5430/wjel.v14n4p154

Khasawneh, M. A.S. (2023). Analysis of the application of pedagogical technology to the learning of children with ASD. *International Journal of Special Education (IJSE)*, *38*(1), 82-89. https://doi.org/10.52291/ijse.2023.38.8

Khasawneh, M. A.S. (2023). Mutual relationships: Saudi universities and the private sector for economic development. *Information Sciences Letters*, *12*(8), 2643-2652. https://doi.org/10.18576/isl/120818

Khasawneh, M. A.S., & Khasawneh, Y. J. (2023). Achieving assessment equity and fairness: Identifying and eliminating bias in assessment tools and practices. https://doi.org/10.20944/preprints202306.0730.v1

Khasawneh, M.A.S. (2023). Social attitude of children with special needs in the learning process. *Medical Archives*, *77*(2), 149. https://doi.org/10.5455/medarh.2023.77.149-153

Khasawneh, Y. J., & Khasawneh, M. A.S. (2023). Availability of voice-recognition devices to support visually impaired students in Saudi Arabian universities. *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications*, *14*(3), 186-193. https://doi.org/10.58346/jowua.2023.i3.014

Khasawneh, Y. J., Alanazi, A. S., Almulla, A. A., & Khasawneh, M. A. (2024). Employing technology inside and outside the classroom by special education teachers in primary schools. *Humanities and Social Sciences Letters*, *12*(1), 1-9. https://doi.org/10.18488/73.v12i1.3591

Khasawneh, Y. J., Alsarayreh, R., Ajlouni, A. A., Eyadat, H. M., Ayasrah, M. N., & Khasawneh, M. A. (2023). An examination of teacher collaboration in professional learning communities and collaborative teaching practices. *Journal of Education and e-Learning Research*, *10*(3), 446-452. https://doi.org/10.20448/jeelr.v10i3.4841

Khasawneh, Y. J., Khasawneh, N., & Khasawneh, M. A. (2024). Exploring the long-term effects: Retention and transfer of skills in gamified learning environment. *International Journal of Data and Network Science*, *8*(1), 195-200. https://doi.org/10.5267/j.ijdns.2023.10.004

Koka, N. A., Alqahtani, S. M. S., Ahmad, J., Jan, N., & Khasawneh, M. (2024). Bridging the gap between academic translation programs and industry demands: Stakeholders' perspectives on future

directions.

Koponen, M. (2015). How to teach machine translation post-editing? Experiences from a post-editing course. In *Proceedings of the 4th Workshop on Post-editing Technology and Practice*.

Koponen, M. (2016). Is machine translation post-editing worth the effort? A survey of research into post-editing and effort. *The Journal of Specialized Translation*, *25*(2).

Lai, V., Smith-Renner, A., Zhang, K., Cheng, R., Zhang, W., Tetreault, J., & Jaimes, A. (2022). An exploration of post-editing effectiveness in text summarization. *arXiv preprint arXiv:2206.06383*.

Liu, D. (2022). IoT-Based English Translation Teaching from the Perspective of Artificial Intelligence. *International Journal of Antennas and Propagation*, *2022*

Makoushina, J. (2007). Translation quality assurance tools: current state and future approaches. *Proceedings of Translating and the Computer 29*.

Mansour, A., Harahsheh, F., Wazani, K. W., khasawneh, M., & AlTaher, B. B. (2024). The influence of social media, big data, and data mining on the evolution of organizational behavior: Empirical study in Jordanian telecommunication sector. *International Journal of Data and Network Science*, *8*(3), 1929-1940. https://doi.org/10.5267/j.ijdns.2024.1.020

McElhaney, T., & Vasconcellos, M. (1988). The translator and the postediting experience. *Technology as translation strategy*, *2*, 140-148.

Mohamad Ahmad Saleem Khasawneh. (2024). Developing a multimedia program to enhance concepts on physics and problem-solving skills among students with disabilities in the intermediate stage. EVOLUTIONARY STUDIES IN *IMAGINATIVE CULTURE*, 601-610. https://doi.org/10.70082/esiculture.vi.842

Mohamad Ahmad Saleem Khasawneh. (2024). Teaching and enhancing foreign language grammar using social media platforms, and the strategic impacts on students' speaking skills. *EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE,* 588-600. https://doi.org/10.70082/esiculture.vi.84

Mohamad Ahmad Saleem Khasawneh. (2024). The effect of mindfulness-based SEL programs on reducing stress and improving mental health in adolescents in Jordan. *EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE*, 721-734. https://doi.org/10.70082/esiculture.vi.1075

Mohamad Ahmad Saleem Khasawneh. (2024). The impact of efficient strategic planning on sound school administration among public school principals in Saudi Arabia. EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE, 185-200. https://doi.org/10.70082/esiculture.vi.868

Mohamad Ahmad Saleem Khasawneh. (2024). The incorrect use of artificial intelligence applications among university students and their impact on the credibility of learning. *EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE,* 633-644. https://doi.org/10.70082/esiculture.vi.845

Mohamad Ahmad Saleem Khasawneh. (2024). The partnership between families and the school in enhancing the integration process for students with special needs. *EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE*, 884-899. https://doi.org/10.70082/esiculture.vi.941

Mohamad Ahmad Saleem Khasawneh. (2024). The relationship between social and emotional competencies and standardized test scores among elementary schools in Saudi Arabia. *EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE,* 611-621. https://doi.org/10.70082/esiculture.vi.843

Mohamad Ahmad Saleem Khasawneh. (2024). The role of school administration in increasing the awareness of using social media safely in learning from the teachers' point of view. *EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE,* 622-632. https://doi.org/10.70082/esiculture.vi.844

Mohamad Ahmad Saleem Khasawneh. (2024). Using TED talks to improve motivation of learning English language skills among middle school students with learning disabilities. *EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE*, 674-685. https://doi.org/10.70082/esiculture.vi.848

Nisar Ahmad Koka, Javed Ahmad, Nusrat Jan2, & Mohamad Ahmad Saleem Khasawneh. (2024). Technology integration in foreign language teacher training programs: Exploring cutting-edge tools and applications for professional development. EVOLUTIONARY STUDIES IN IMAGINATIVE CULTURE, 135-148. https://doi.org/10.70082/esiculture.vi.776

Nser, K. K., Alhrahsheh, R., Alshalabi, N., Jarrah, H. Y., & Khasawneh, M. A. (2024). Multimodal social network analysis: Exploring language, visual, and audio data in online communities. *Studies in Media and Communication*, *12*(2), 148. https://doi.org/10.11114/smc.v12i2.6666

O'brien, S. (2002). Teaching post-editing: a proposal for course content. In *Proceedings of the 6th EAMT Workshop: Teaching machine translation*.

Olohan, M. (2019). Technology, translation. In *Routledge encyclopedia of translation studies* (pp. 574-578). Routledge.

Qing, L. (2022). On the Strategies of Machine Translation Post-Editing Based on Cloud Platform. *Advances in Engineering Technology Research*, *1*(3), 11-11. Wang, Y. (2023). Artificial Intelligence Technologies in College English Translation Teaching. *Journal of Psycholinguistic Research*, 1-20.

Rossi, C., & Carré, A. (2022). How to choose a suitable neural machine translation solution: Evaluation of MT quality. *Machine translation for everyone: Empowering users in the age of artificial intelligence*, *18*, 51.

Saleem Khasawneh, M. A. (2024). Quantifying the impact of career preparedness programs for Saudi students with disabilities. Journal of Educational and Social Research, 14(6), 345. https://doi.org/10.36941/jesr-2024-0177

Saleem Khasawneh, M. A. (2024). Using information and communication technology as a time management tool among school principals in the secondary stage. Journal of Infrastructure, Policy and Development, 8(7), 4799. https://doi.org/10.24294/jipd.v8i7.4799

Saleem Khasawneh, M. A. (2024). The level of availability of environmental facilities in public schools and their role in the academic performance of students with disabilities. *Journal of Educational and Social Research*, *14*(3), 124. https://doi.org/10.36941/jesr-2024-0061

Salman, O. K., Khasawneh, Y. J., Alqudah, H., Alwaely, S. A., & Khasawneh, M. A. (2024). Tailoring gamification to individual learners: A study on personalization variables for skill enhancement. *International Journal of Data and Network Science*, *8*(2), 789-796. https://doi.org/10.5267/j.ijdns.2023.12.025

Shater, A., AlMahdawi, A. J., & Khasawneh, M. A. S. (2023). The Digital Learning of Disabled Students: Perceptions of Teachers in Public Schools. *Inf. Sci. Letters. Int. J*, *12*, 879-887.

Shater, A., Bani-Rshaid, A. M., Al-Fayoumi, M. M., Al-Shaar, A. S., Bukhamseen, A. M., & Khasawneh, M. A. (2023). Peer-mediated intervention through Snapchat: Enhancing social interactions among students with autism. *International Journal of Data and Network Science*, *7*(4), 2083-2088. https://doi.org/10.5267/j.ijdns.2023.10.101

Shawaqfeh, A. T., & Khasawneh, M. A. (2023). Incorporating corpus linguistics tools in the training and professional development of lecturers in translation studies. *Studies in Media and Communication*, *11*(7), 260. https://doi.org/10.11114/smc.v11i7.6379

Shawaqfeh, A. T., Jameel, A. S., Al-adwan, L. A., & Khasawneh, M. A. (2023). Interaction as a mechanism to enhance English language proficiency in the classroom. *Journal of Language Teaching and Research*, *15*(1), 229-234. https://doi.org/10.17507/jltr.1501.25

Shiwen, Y., & Xiaojing, B. (2014). Rule-based machine translation. In *Routledge encyclopedia of translation technology* (pp. 186-200). Routledge.

Stasimioti, M., & Sosoni, V. (2020, October). Translation vs post-editing of NMT output: Insights from the English-Greek language pair. In *Proceedings of 1st Workshop on Post-Editing in Modern-Day Translation* (pp. 109-124).

Tao, Y., & Wang, H. (2022). Introduction to the special issue Translation technology teaching: views and visions. *The Interpreter and Translator Trainer*, *16*(3), 271- 274.

Wafa'A, H., & Khasawneh, M. A. S. (2024). Leveraging YouTube Visual Storytelling for Fostering Richer Reading and Writing Proficiency by Foreign Language Undergraduates. *Eurasian Journal of Educational Research*, *111*(111), 181-196.

Wafa'A, H., & Khasawneh, M. A. S. (2024). The Correlation Between the Use of YouTube Short Videos to Enhance Foreign Language Reading and Writing Proficiency, and the Academic Performance of Undergraduates. *Eurasian Journal of Educational Research*, *109*(109), 1-13.

Wei, Z. (2020). The development prospect of English translation software based on artificial intelligence technology. In *Journal of Physics: Conference Series* (Vol. 1533, No. 3, p. 032081). IOP Publishing.

Xiao, K., & Martín, R. M. (2020). Cognitive Translation Studies: Models and methods at the cutting edge. *Linguistica Antverpiensia, New Series–Themes in Translation Studies*, *19*.

Xin, Y. (2022). A Systematic Study on the Application of Information Technology in Teaching Japanese

Translation Courses. *Wireless Communications and Mobile Computing*, *2022*.

Yaser, N. A. S., Samar, A. J., Firas, A. S. A. T., & Mohamad, M.A.S. (2022). USING SOCIAL MEDIA NETWORK BY SPECIAL EDUCATION TEACHERS. *International Journal of Cognitive Research in Science, Engineering and Education*, *10*(2), 39-50. DOI: 10.23947/2334-8496-2022-10-2-39-50

Yu, M. (2021). The dilemmas and reform of translation education in the age of artificial intelligence. In *2021 2nd International Conference on Artificial Intelligence and Education (ICAIE)* (pp. 40-44). IEEE.

Yves, G. (2019). Impact of technology on Translation and Translation Studies. *Russian Journal of Linguistics*, *23*(2), 344-361.

Zaghlool, Z. D., & Khasawneh, M. A. (2023). Aligning translation curricula with technological advancements; Insights from artificial intelligence researchers and language educators. *Studies in Media and Communication*, *12*(1), 58. https://doi.org/10.11114/smc.v12i1.6378

Zhao, W. (2020). A practical study on college English translation teaching based on CAT technology. In *Journal of Physics: Conference Series* (Vol. 1533, No. 2, p. 022062). IOP Publishing.

Zheng, S., & Zhu, S. (2020). A study of computer aided translation based on artificial intelligence technology. In *Journal of Physics: Conference Series* (Vol. 1646, No. 1, p. 012127). IOP Publishing