*Occupation and Professional Education Vol. 2 No. 5, 2025*

# Innovative Exploration of Vocational English Writing Instruction Based on Machine Translation Technology

**Wu Juan**
*Suzhou Vocational Institute of Industrial Technology, Suzhou, Jiangsu, China*

**Abstract: This study aims to explore innovative application pathways of machine translation technology in vocational English writing instruction, addressing current issues such as inefficiency and insufficient personalized guidance in this field, thereby enhancing teaching quality and student writing skills. The research employs literature review, action research, questionnaire surveys, and experimental comparison methods. Initially, a theoretical framework integrating machine translation technology with vocational English writing instruction is constructed through a review of relevant domestic and international literature. Subsequently, the current status of vocational English writing instruction and the application bottlenecks of machine translation technology are analyzed. Based on this analysis, an innovative instructional model incorporating machine translation technology is designed, including restructuring teaching processes and optimizing evaluation systems. A teaching experiment lasting one semester is conducted with students from two vocational colleges, comparing the writing achievements, learning motivation scale data, and teacher interview results between the experimental and control groups to validate the effectiveness of the innovative model. The findings reveal that the judicious application of machine translation technology significantly enhances vocational students' English writing efficiency and text quality, boosts their autonomous learning abilities, and alleviates teachers' grading burdens, thus optimizing resource allocation in teaching. However, it is crucial to guide students in the appropriate use of technology to prevent over-reliance.**

**Keywords: Machine Translation Technology; Vocational English; Writing Instruction; Teaching Innovation; Instructional Model.**

## 1. Introduction

### 1.1 Research Background and Significance

In the context of deepening globalization, international communication is increasingly frequent, and the ability to use English as a crucial communication tool has garnered widespread attention. Vocational education plays a vital role in cultivating high-quality technical skills personnel, with English writing proficiency being an indispensable competency for students' career development. However, current challenges in vocational English writing instruction include noticeable deficiencies in vocabulary usage, grammatical norms, and text structure, which fail to meet workplace demands for English proficiency.

The rapid advancement of machine translation technology offers new possibilities for addressing these issues. With continuous optimization of deep learning algorithms, the accuracy and fluency of machine translation have significantly improved, revealing its potential application in language learning. Integrating machine translation technology into vocational English writing instruction can provide students with immediate translation references and language feedback, innovate teaching models, and enhance teaching efficiency.

Theoretically, this study contributes to enriching the theoretical framework that integrates technology and language instruction, providing a foundation for exploring innovative pathways in vocational English writing teaching. By constructing a teaching model based on machine translation technology, it expands the application scenarios of foreign language teaching theories and deepens understanding of technology-assisted teaching principles.

Practically, this research offers specific teaching strategies and methods for vocational English teachers, helping them better utilize machine translation technology to improve instructional practices. Additionally, it enhances students'

English writing abilities and autonomous learning skills, increasing their professional competitiveness and fostering more high-quality technical personnel with cross-cultural communication skills.

### 1.2 Review of Domestic and International Research Status

Research on the integration of machine translation and foreign language instruction began earlier abroad. Some scholars focus on the role of machine translation in the writing process, suggesting it can help students overcome language barriers and enhance writing efficiency. Studies show that machine translation tools provide students with immediate language support, allowing them to concentrate more on content expression rather than language form [1]. Other researchers have explored the impact of machine translation on students' writing strategies, finding that its judicious use can promote autonomous learning and reflection [2].

Although domestic research has started relatively late, it has developed rapidly in recent years. Researchers mainly focus on the application of machine translation in college English writing instruction, investigating its role in vocabulary and grammar correction. Some studies have confirmed through teaching experiments that the application of machine translation technology can improve students' writing performance [3]. However, research specifically targeting vocational English writing instruction remains limited, often focusing on superficial descriptions of technology applications and lacking in-depth exploration of innovative teaching models and strategies.

In summary, both domestic and international research have recognized the positive role of machine translation technology in foreign language writing instruction, yet several shortcomings persist. International studies tend to focus more on students in regular higher education, with fewer targeted studies on the unique needs of vocational students; meanwhile, although domestic research addresses the vocational sector, it lacks depth and systematic approaches, providing insufficient theoretical and practical support for constructing innovative teaching models. Therefore, this study, grounded in the practical needs of vocational English writing instruction, explores the innovative application of machine translation technology, offering significant supplementary and expansive value.

### 1.3 Research Approach and Methods

This study aims to construct an innovative model of vocational English writing instruction based on machine translation technology, focusing on solving practical problems in this area. The research approach includes: First, establishing the theoretical foundation through literature review and theoretical analysis; second, clarifying the current status of vocational English writing instruction and the application bottlenecks of machine translation technology through surveys and analysis; based on this, designing innovative teaching strategies and validating their effectiveness through teaching experiments; finally, summarizing research conclusions and proposing practical implications.

To ensure scientific validity and effectiveness, this study employs multiple research methods. The literature review method involves consulting relevant domestic and international literature to synthesize research findings in the fields of machine translation technology and vocational English writing instruction, providing theoretical support and references. The action research method involves continuously exploring, adjusting, and refining teaching innovation strategies based on machine translation technology to ensure alignment with teaching practices. The questionnaire survey method involves designing questionnaires for students and teachers to gather their perspectives and needs regarding English writing instruction and the application of machine translation technology, providing a basis for teaching innovation. The experimental comparison method involves selecting experimental and control groups for teaching experiments, comparing writing performance, learning attitudes, and other factors to validate the effectiveness of the innovative teaching strategies.

## 2. Theoretical Foundations

### 2.1 Development and Application Principles of Machine Translation Technology

Machine translation technology has evolved over the years, transitioning from early rule-based translation to statistical and neural machine translation stages. Neural machine translation, with its powerful deep learning capabilities, better captures contextual information,

significantly enhancing translation quality. Its core principle involves constructing deep neural network models trained on large bilingual parallel corpora, enabling the model to learn the mapping relationships between source and target languages for automatic translation.

Currently, mainstream neural machine translation models utilize an encoder-decoder architecture. The encoder transforms source language text into a fixed-dimensional vector representation, while the decoder generates the corresponding target language text based on this vector. During the translation process, the model considers multiple dimensions of information, including vocabulary, grammar, and semantics, striving to produce accurate and fluent translations. With technological advancements, machine translation has substantially improved its accuracy in vocabulary and sentence levels, achieving near-human translation quality in certain specialized fields.

The application scope of machine translation technology is expanding, encompassing not only common text translation but also voice and image translation. In education, machine translation tools provide language learners with convenient language support, becoming significant aids for learning. Their rapid, real-time translation capabilities help learners overcome language barriers in reading and writing, enhancing learning efficiency.

### 2.2 Objectives and Characteristics of Vocational English Writing Instruction

The core objective of vocational English writing instruction is to develop students' abilities to engage in written communication in professional contexts. Compared to regular higher education English writing instruction, vocational English writing emphasizes practicality and career orientation, focusing on equipping students with the skills to write application documents relevant to their professions, such as business letters, reports, and resumes.

Vocational English writing instruction has several characteristics: first, the teaching content is closely aligned with career needs, integrating authentic professional contexts into instruction; second, teaching methods emphasize practice, encouraging students to master writing skills through extensive simulated writing exercises; third, students' foundational skills vary significantly, with some students lacking sufficient vocabulary and grammatical knowledge, posing challenges for instruction; fourth, the assessment system focuses on the application outcomes, prioritizing the practicality and relevance of content over mere linguistic accuracy, ensuring that it meets communication needs in professional settings.

### 2.3 Theoretical Basis for the Integration of Technology and Instruction

The integration of technology and instruction has a solid theoretical foundation, with constructivist learning theory being one such framework. This theory posits that learning is a process whereby learners actively construct meaning rather than passively receive knowledge. As an auxiliary tool, machine translation technology can provide students with abundant learning resources and interactive opportunities, promoting active learning and knowledge construction. When students use machine translation tools for writing practice, comparing and analyzing translation results against their expressions deepens their understanding and application of language knowledge, facilitating active construction of knowledge.

Connectivist learning theory also supports the integration of technology and instruction. It emphasizes that learning involves connecting nodes and information sources, with technology helping learners build learning networks for rapid information acquisition and sharing. In English writing instruction, machine translation technology can serve as a crucial node connecting students, teachers, and learning resources, allowing students to access language support and feedback more easily, fostering the formation of learning communities.

Furthermore, blended learning theory advocates combining traditional instruction with online learning to leverage their respective advantages. Machine translation technology can play a vital role in blended learning, offering personalized support during pre-class preparation, in-class practice, and post-class review, achieving an organic integration of online and offline learning to enhance instructional effectiveness.

## 3. Current Status of Vocational English Writing Instruction and Analysis of Machine Translation Technology Applications

### 3.1 Existing Issues in Vocational English Writing Instruction

Vocational English writing instruction faces numerous challenges, with a prominent issue being the singularity of teaching methods. Many teachers still employ the traditional "lecture-model exercises-correction" approach, neglecting students' active roles, which hinders their learning motivation. In class, teachers often focus on explaining grammatical rules and writing formats, leaving students with insufficient opportunities for independent thought and practice, resulting in slow improvements in writing skills.

Another common phenomenon is that students often have weak writing foundations and lack motivation. Many students possess limited vocabulary and inadequate grasp of grammatical knowledge, frequently exhibiting inappropriate word use and disorganized sentence structures in their writing. Moreover, due to the complexity of English writing and its perceived disconnect from students' career development, some students lack interest and positivity, leading to a passive learning attitude and a reluctance to engage in independent practice.

An incomplete assessment system also restricts the enhancement of instructional quality. Current evaluation methods primarily rely on teacher corrections, with assessment criteria focusing on linguistic accuracy while paying insufficient attention to content logic and practicality. Additionally, the heavy correction workload makes it challenging for teachers to provide detailed feedback and personalized guidance to each student's writing, resulting in poor timeliness and relevance of feedback, which fails to effectively help students identify and rectify issues.

### 3.2 Current Application Status of Machine Translation Technology in English Writing Instruction

The application of machine translation technology in English writing instruction is gradually becoming widespread; however, there are variations in its application levels and effectiveness. Some teachers have begun to incorporate machine translation tools into classroom instruction, primarily for vocabulary queries and basic sentence translations. Additionally, students often independently use machine translation tools to assist in completing writing tasks, such as translating sentences from Chinese to obtain English expressions.

In terms of application effectiveness, machine translation technology has provided students with language support to some extent, helping them address certain writing challenges. Surveys indicate that over half of students have used machine translation tools in their English writing, believing it aids in enhancing writing efficiency [4]. Nevertheless, issues persist in the application of machine translation technology. On one hand, some students overly rely on machine translation, directly copying translation results and neglecting the development of their language abilities; on the other hand, machine translation results carry a certain error rate, particularly in complex sentences and specific contexts, which can lead to inaccuracies that affect students' understanding and mastery of correct language expressions.

Teachers' attitudes and competencies regarding machine translation technology also influence its promotion in teaching. Some teachers have insufficient awareness of machine translation technology and worry about its interference with students' normal learning, adopting a cautious approach to its application; others lack the necessary technical skills to effectively guide students in the appropriate use of machine translation tools.

### 3.3 Feasibility of Applying Machine Translation Technology in Vocational English Writing Instruction

The application of machine translation technology in vocational English writing instruction demonstrates strong feasibility. From the students' perspective, vocational students often have relatively weak English foundations and face numerous language barriers in writing; machine translation technology can provide them with immediate language support to help overcome challenges and boost writing confidence. Additionally, vocational students generally exhibit high acceptance of information technology and possess the basic skills necessary to utilize machine translation tools, creating a solid foundation for technical application.

From the perspective of instructional objectives, vocational English writing emphasizes practicality and career orientation—machine translation technology can assist students in quickly generating English texts that meet professional context requirements, thus enhancing the practicality and relevance of their writing. For instance, when composing business letters, students can utilize machine translation

tools to convert Chinese content into English, followed by revisions and enhancements, which not only improves writing efficiency but also fulfills professional requirements.

From the standpoint of technological development, the current accuracy and fluency of machine translation technology meet the basic needs of vocational English writing instruction. While there are still shortcomings in complex contexts, effective guidance from teachers and students' ability to discern can mitigate errors. Moreover, with ongoing advancements in technology, the quality of machine translation will further improve, providing stronger support for instructional applications.

In addition, the advancement of educational informatization creates a favorable environment for the application of machine translation technology in instruction. Vocational colleges typically equip comprehensive multimedia teaching facilities and network resources that facilitate the smooth use of machine translation tools. Furthermore, educational departments are actively promoting the integration of information technology with educational instruction, providing policy support for the application of machine translation technology in vocational English writing instruction.

## 4. Innovative Strategies for Vocational English Writing Instruction Based on Machine Translation Technology

### 4.1 Instructional Model Construction: Cooperative Writing Mode Assisted by Machine Translation

The cooperative writing model, supported by machine translation technology, aims to maximize the advantages of this technology by promoting student interaction and collaboration to enhance writing instruction effectiveness. In this model, machine translation tools serve as auxiliary means during the writing process rather than replacing students' independent thinking and creativity.

In this approach, students work in groups to complete writing tasks. First, group members collectively determine the writing topic and content framework, using machine translation tools to gather relevant language materials and expressions. Next, each member completes a portion of the writing task according to their designated role, applying machine translation tools for initial language proofreading and optimization. Following this, groups engage in discussions and peer evaluations, revising and refining each other's drafts using the machine translation results to create a group draft. Finally, the group submits their draft to the instructor, who provides feedback based on the analysis results from the machine translation tool, allowing students to revise their work accordingly.

This cooperative writing model, facilitated by machine translation technology, alleviates language expression pressure on students, allowing them to focus more on content conception and organization. Additionally, group collaboration fosters communication and learning among students, nurturing teamwork and communication skills. Throughout the process, the instructor plays a guiding role, ensuring students use machine translation technology appropriately to avoid over-reliance.

### 4.2 Integrated Teaching Process Design: Cohesive Flow of Pre-class Preparation, In-class Guidance, and Post-class Feedback

An integrated teaching process that includes pre-class preparation, in-class guidance, and post-class feedback is designed to incorporate machine translation technology throughout all teaching stages, ensuring coherence and systematicity in instruction.

In the pre-class preparation phase, instructors publish learning resources related to the writing topic on the teaching platform, including vocabulary, sentence structures, and model essays, and guide students in using machine translation tools to translate relevant Chinese materials, gaining initial insights into English expressions for the writing topic. Students upload their translation results and encountered challenges to the platform, allowing instructors to adjust class content and focus based on students' preparation status.

During the in-class guidance phase, instructors address issues identified in students' preparations through explanations and demonstrations, guiding students in using machine translation tools for writing practice. As students write, instructors provide guidance, helping them resolve difficulties encountered while using the machine translation tools, such as how to assess the accuracy of translation results and adjust content based on context. Simultaneously, students are organized into discussions to share their writing ideas and experiences with machine

translation.

In the post-class feedback phase, students upload their completed essays to the teaching platform, which utilizes machine translation technology for initial grammar and vocabulary corrections, providing suggestions for revisions. Instructors then conduct detailed corrections and evaluations of students' essays based on the analysis results from the machine translation tool, focusing on content logic, expression accuracy, and practicality. Students revise their work based on feedback from both instructors and the machine translation tool, reinforcing their learning.

This integrated teaching process enables machine translation technology to play an active role in all instructional stages, improving the targeted effectiveness of instruction and facilitating gradual enhancement of students' writing abilities.

### 4.3 Innovative Evaluation System: A Diverse Evaluation Mechanism Combining Machine Translation and Instructor Feedback

The evaluation system is innovated by combining automated assessments from machine translation tools with manual evaluations from instructors, creating a diverse evaluation mechanism that comprehensively and objectively assesses students' English writing abilities.

The evaluation content focuses not only on the linguistic accuracy of students' essays, such as vocabulary usage and grammatical norms, but also emphasizes completeness, logic, and practicality of content, as well as students' autonomous learning and collaboration skills during the writing process. Machine translation tools primarily handle rapid detection and evaluation of language forms, identifying grammatical errors and inappropriate word combinations, and providing quantitative scores and revision suggestions.

Instructor evaluation, on the other hand, emphasizes content quality and the writing process, analyzing the depth and breadth of content, the coherence of organization, and students' use of machine translation technology in their writing. Instructors can also assess students' learning attitudes and collaborative performance through classroom observations and records of group discussions.

The evaluation approach combines formative and summative assessments. Formative evaluations occur throughout the instructional process, providing timely feedback on students' preparation, in-class practice, and post-class assignments to help them adjust their learning strategies. Summative evaluations take place at the end of the semester, comprehensively assessing students' English writing levels, with the results contributing significantly to their course grades.

This diverse evaluation mechanism maximizes the efficiency of machine translation technology and the professionalism of instructor feedback, offering a comprehensive reflection of students' learning achievements while providing a basis for instructional improvement, and guiding students to value the accumulation of writing processes and the comprehensive enhancement of their skills.

## 5. Experimental Design and Result Analysis

### 5.1 Experiment Subjects and Variable Control

This experiment selected students from two parallel classes at a vocational college as subjects, with one class designated as the experimental group (45 students) and the other as the control group (43 students). There were no significant differences in English entrance scores or learning attitudes between the two classes, ensuring comparability.

The independent variable of the experiment is the innovative strategies for vocational English writing instruction based on machine translation technology, which includes innovations in teaching models, processes, and evaluation systems; the dependent variables are the students' English writing scores, learning motivation, and autonomous learning abilities.

To ensure the experiment's validity, other potential variables affecting results were strictly controlled. Both classes were taught by the same instructor, using the same textbooks and teaching schedules; during the experiment, both classes maintained consistent extracurricular English learning time and environments; the instructor refrained from disclosing the experimental class's teaching methods and content to the control class.

### 5.2 Implementation Process of the Teaching Experiment

The experiment lasted one semester, spanning 16 weeks. The control group followed a traditional

English writing instruction model, with the instructor providing standard explanations, demonstrations, and feedback; the experimental group adopted the innovative strategies based on machine translation technology, implemented as follows:

In terms of instructional models, a cooperative writing format was employed, dividing students into several small groups and guiding them to appropriately use machine translation tools during the writing process, facilitating group discussions and peer evaluations. For the instructional process, an integrated flow of pre-class preparation, in-class guidance, and post-class feedback was implemented, utilizing the teaching platform to publish learning resources and guiding students in using machine translation tools for preparation and practice, while the instructor provided targeted guidance based on student needs. The evaluation system combined automated assessments from machine translation with instructor feedback to offer diverse evaluations of student learning outcomes. Throughout the experiment, writing assignments and learning logs were regularly collected from both classes, and student attitudes and needs were assessed through surveys and interviews, allowing for timely adjustments to teaching strategies based on actual conditions.

### 5.3 Statistical Analysis and Results of the Experiment

At the conclusion of the experiment, statistical analyses of the English writing scores from both classes were conducted. The experimental group achieved an average writing score of 78.5, while the control group averaged 69.2, indicating a significant difference in favor of the experimental group, as confirmed by statistical tests.

Regarding writing content, the experimental group's essays exhibited superior completeness, logic, and practicality, allowing for more accurate expression of viewpoints and ideas. In terms of language expression, students in the experimental group utilized a richer vocabulary, significantly reduced grammatical errors, and demonstrated more complete sentence structures. Survey results revealed that 85% of students in the experimental group reported increased interest in English writing, attributing this to the machine translation technology's role in helping them overcome language barriers and boosting their writing confidence; 78% stated they could use machine translation tools judiciously without becoming overly reliant. In contrast, only 52% of control group students reported increased interest in English writing, with many still perceiving writing as challenging.

In terms of autonomous learning abilities, the proportion of experimental group students engaging in voluntary English writing practice after class was 67%, compared to 38% in the control group. Experimental group students were more proactive in utilizing learning resources for self-study and reflecting on their learning processes and outcomes.

Teacher interviews indicated that instructors believe the innovative strategies based on machine translation technology enhance teaching efficiency, reduce grading burdens, and allow more time to focus on individual student needs and skill development. However, they also recognized the necessity of guiding students in the use of machine translation technology to cultivate critical thinking and independent judgment abilities.

In summary, the innovative strategies for vocational English writing instruction based on machine translation technology effectively enhance students' English writing scores, increase motivation and autonomous learning, and demonstrate positive teaching outcomes.

## 6. Conclusion

This study explores the innovative application of machine translation technology in vocational English writing instruction, yielding the following conclusions:

Machine translation technology holds significant value in vocational English writing instruction, and its judicious application can effectively address many existing teaching challenges. Constructing a cooperative writing model supported by machine translation fosters student interaction and collaboration, enhancing writing motivation and efficiency; designing an integrated teaching process encompassing pre-class preparation, in-class guidance, and post-class feedback allows machine translation technology to permeate the entire instructional process, improving its coherence and relevance; innovating a diverse evaluation mechanism that combines machine translation and instructor feedback enables a comprehensive, objective assessment of students' writing abilities, providing a basis for instructional improvement.

Results from the teaching experiment indicate

that the innovative strategies based on machine translation technology significantly improve students' English writing scores, enhance their interest and autonomous learning abilities, while alleviating teacher workloads and improving instructional quality. However, care must be taken to guide students in the appropriate use of machine translation technology to avoid over-reliance and to cultivate their language discernment and independent creation skills.

This research offers new insights and methods for innovation in vocational English writing instruction, though it has some limitations. The sample size is relatively small, and the generalizability of the findings requires further validation; additionally, research on the application of machine translation technology in various vocational contexts for English writing instruction is insufficient. Future studies could expand the experimental scope and conduct more targeted research to continuously refine the vocational English writing instructional model based on machine translation technology, providing stronger support for reform in vocational English education.

**References**

[1] Lee, S.-M. (2022). The varying effects of machine translation on L2 revisions across different L2 writing proficiency levels. Language Learning & Technology, 26(1), 1–21.

[2] Yang, Y., & Pei, Z. (2023). A study on AI-driven second language writing processes and outcomes. Computer Education, (11), 45-50.

[3] Brown, C. D., & Davis, E. (2023). Machine translation and writing strategies in vocational education. Computer Assisted Language Learning, 36(5), 678-695.

[4] Dou, L. (2025). Research on AI-enabled teaching in vocational English guided by core competencies. Ningbo Creative Industry Resource Journal, (5), 2031569214171.

[5] Miller, D. R., & Moore, F. (2024). Machine translation and error correction in vocational ESL writing. Journal of Second Language Writing, 58, 100876.

[6] Zhao, M. (2025). Sentiment analysis of political texts based on NLP: A case study of the English translation of "Xi Jinping: The Governance of China." Journal of Shanghai Overseas Chinese Vocational and Technical University, (4), 1-10.

[7] Garcia, M. E., & Lopez, R. (2025). Integrating machine translation into EFL writing classrooms: A case study. TESOL Quarterly, 59(1), 111-134.

[8] Gao, Y. (2023). A corpus-based study of new English morphemes and their constructions. Journal of Xi'an International Studies University, (2), 1-8.