Research on Foreign Language Writing Teaching Based on AI + SPOC + BOPPPS Teaching Model

Mingyuan Liu[1] Jun Liang[2]

[1,2] *School of Foreign Languages, Jing Gang Shan University, Ji'an, Jiangxi 343009, China*

ABSTRACT

The development and popularization of artificial intelligence technology have brought comprehensive innovation to teaching. This study takes non-universal languages as an example and proposes an artificial intelligence assisted foreign language writing teaching framework consisting of four elements: understanding, application, reflection, and integration. Based on the existing problems in foreign language writing teaching and learning, it explores the foreign language writing teaching practice based on the hybrid BOPPPS teaching model with the assistance of artificial intelligence throughout the entire process, aiming to improve teaching effectiveness, stimulate students' interest and ability in writing, enhance their self-efficacy, cultivate independent learning and lifelong learning awareness, and promote the cultivation of innovation ability.

Keywords: Foreign language writing, AI + SPOC + BOPPPS, Teaching model.

1. INTRODUCTION

The development of science and technology has promoted the pace of modernization reform in education and teaching. Artificial intelligence (AI) refers to the technological means of simulating human intelligence using computers and related technologies. This term was first proposed in 1956. [1] B F. Skinner's programmatic teaching machine in 1958, which can store and present teaching materials, receive learner responses and provide feedback, is the earliest attempt of AI application in teaching. [2] Since then, researchers from different fields have studied the application of AI in classroom practice, teacher collaboration, and learner support from different perspectives. In the development process of more than 60 years, especially driven by new theories and technologies such as mobile Internet and big data, as well as strong demand for economic and social development, AI has entered a new stage of development, showing new characteristics such as deep learning, cross-border integration, human-computer collaboration, etc. The technology represented by AI endows foreign language teaching with characteristics such as innovation, interaction, cooperation, universality, and personalization. [3]

AI empowers foreign language education, bringing opportunities and challenges. The AI technologies applied in foreign language teaching include speech and image recognition, semantic and emotional analysis, human-computer interaction, machine learning, adaptive learning, intelligent educational robots, virtual reality scene teaching, etc. AI has gradually integrated and continuously changed traditional teaching concepts, teaching models, teaching environments, teaching methods, and learning paradigms. Compared with the combination and research of intelligent technology and language teaching with a long history, "the depth of integration between intelligent technology and educational teaching theory is not enough." [4] Therefore, this article takes foreign language writing teaching in non-universal languages as an example, based on teaching practice and teaching pain points, proposes the AI + SPOC + BOPPPS teaching model, aiming to utilize the advantages of AI, propose teaching improvement strategies, innovate foreign language writing teaching, and provide reference and reference for foreign language teaching reform and development.

2. PROBLEMS IN TEACHING WRITING IN NON-UNIVERSAL LANGUAGES

Non-universal languages are generally referred to as "minor languages". Narrowly defined, they refer to the six official languages of the United Nations, namely languages other than English, Chinese, French, Russian, Spanish, and Arabic. Broadly defined, they refer to languages other than English. [5] Students studying minor languages in colleges and universities often have zero foundation, which means they start learning letters and pronunciation when they enter school. Generally, in the third semester, students enter a specialized writing learning phase, learning various types of writing styles, language expression methods, and specialized writing terminology. However, language learning is a process that requires accumulation and use. Due to students only studying for two semesters, their input in learning is insufficient and their application ability is poor, so writing output has always been one of the weaknesses of foreign language learners. Taking the German major as an example, through the analysis and summary of students' exercises, assignments, and tests, the following problems exist in their German writing output:

The first is the language format defect. Specifically manifested as:

- Grammar, students may not have a solid grasp of grammar knowledge points. The main parts of speech in German, such as verbs, nouns, articles, adjectives, and pronouns, need to undergo corresponding morphological changes according to grammar rules. For students who have only studied for two semesters, it is relatively difficult to master and apply these grammar rules proficiently. Students cannot correctly write about verb conjugation, noun and adjective conjugation, preposition valence, etc., and there are many grammar errors in the expression of essay sentences.

- The wording mainly includes the selection and improper use of words in writing expression. The vocabulary of students is limited, especially lacking in the main verb vocabulary. Students often use dictionaries to translate corresponding Chinese German vocabulary directly into German writing, or do not pay attention to the differences in style and semantic color between different vocabulary, resulting in inappropriate word usage.

- Writing, students often make writing errors due to carelessness, poor mastery of phonetic pronunciation knowledge, vocabulary memorization errors, learning habits, or influence from English word writing, and failure to follow German orthography rules. For example, the first letter of a noun or sentence is not capitalized, and there are spelling errors in vocabulary (such as dass written as daß).

- Punctuation marks, on the one hand, they make mistakes in the use of German specific punctuation marks. Students are accustomed to using Chinese punctuation marks, such as using double quotation marks in Chinese instead of double quotation marks in German, or using book title numbers instead of italics or double quotation marks in German; on the other hand, they cannot use spaces correctly. Students often encounter errors in electronic document assignments where there are no spaces after punctuation, or errors in German date periods and numerical expressions where there are spaces before and after decimal points.

- Sentence structure, due to the lack of overall coherence and coherence awareness in the text, students are unable to use conjunctions to write complex master-slave compound sentences, and cannot use pronouns or time adverbs to connect sentences to reflect contextual logical relationships. Most students prefer to use relatively simple subject verb object sentence structures to organize their compositions.

- Students have poor mastery of expression and language skills. Firstly, students are unable to use rich vocabulary to express their compositions or the content they want to write; Secondly, there is a lack of mastery of rich language techniques to change sentence structures, and the vocabulary used is relatively simple, with verbs often using auxiliary verbs such as "sein" or "haben"; Furthermore, sentences with "Chinese thinking" often appear in compositions, and students directly translate Chinese compositions into German.

The second is content defects. Specifically manifested as:

- The structure of the article is unreasonable. The structure of a German essay includes a

title, introduction, main text, and conclusion. Students fail to arrange the structure of the essay reasonably according to different literary genres or writing requirements, often resulting in incomplete structure. For example, if the essay lacks a title, clear paragraph division cannot be seen.

- Logic, there is no correlation between the front and back of the statement or incorrect use of linking devices. Due to the frequent use of subject verb object simple sentences in the composition, the overall article lacks logical coherence.

- Argumentation, when writing in a argumentative style, students may not have a clear understanding of concepts such as arguments, evidence, and argumentation, and may only express their views in short sentences. Argumentation lacks evidence or lacks persuasiveness.

- The content cannot be fully completed according to the writing requirements, resulting in omissions or deficiencies in the composition.

- Writing style, the writing style does not meet the stylistic requirements. Students cannot distinguish between written and oral language. Taking German as an example, in Bericht, a type of applied writing that requires an objective and neutral attitude, students will use language expressions such as "excellent" and "sudden" that do not match the type of writing.

- Format, students don't write according to the inherent format. According to the format of a Chinese essay, when writing a German essay, people should leave two blank spaces at the beginning of a paragraph.

- Repetition, one is the repetition of content, and the other is the repetition of language means such as vocabulary and sentence structures.

The traditional teaching process of non-universal language foreign language writing usually includes the following steps: the teacher formulates a writing framework, analyzes sample essays, students imitate writing, the teacher corrects and comments on writing. Even with the use of "flipped classroom" and "blended teaching model", the main steps in writing teaching cannot be separated from "grading" and "appreciation". Moreover, essay grading and feedback in foreign language writing teaching are crucial for improving students' foreign language writing level and are related to their self-learning cognition. It is difficult for teachers to ensure that there are no omissions or provide comprehensive feedback on their essays, and it is also impossible to provide a large amount of written feedback to the best of their ability. Therefore, there may be a phenomenon of "top heavy and bottom light" in writing teaching, and writing evaluation classes may become "model essay appreciation classes", which can lead to low participation, low self-efficacy, and even fear of difficulties and anxiety among students in the writing learning process.

3. AI + SPOC + BOPPPS TEACHING MODEL

3.1 Teaching Framework

On the one hand, in a world where the use of AI in the workplace is increasingly valued, students with experience in manipulating AI to improve productivity and efficiency will lag behind those with experience and skills in effectively using these tools. Introducing the training of AI as a skill in foreign language writing teaching can help students efficiently use these tools in future work processes. If effective AI based guidance cannot be provided for these learners, it will not only harm their future career success opportunities, but also further exacerbate existing educational inequality. [6] On the other hand, the SPOC+BOPPPS teaching model is based on constructivism and communicative approach. During the teaching process, it not only puts students in a dominant position, encourages them to actively acquire and acquire learning content, thereby enabling them to cultivate learning motivation independently, but also puts teaching knowledge points in front, making it easier for teachers to obtain student learning information based on pre learning feedback. [7]

Given the direct and long-term background of teaching, utilizing, and dialectical thinking about AI to students, this article proposes a teaching practice framework based on the hybrid BOPPPS teaching model, with students as the main body, teachers as guides, and AI assisted foreign language writing. In this teaching framework, AI is a teaching aid technology; SPOC (Small Private Online Course), also known as "small-scale restricted online course", is generally designed independently by teachers or teacher teams, utilizing their own teaching resources to independently organize small-scale teaching forms.

It has the characteristics of customization and privacy, [8] and is the forefront of student self-directed learning; BOPPPS is the teaching process stage, which includes bridge-in, objective or outcome, pre-assessment, participatory learning, post-assessment, and summary. [9] The purpose of the teaching practice framework is to enhance students' modern information technology literacy, improve their language acquisition ability, and create a certain foundation for long-term use of AI based tools in learning, work, research, and other environments. The framework consists of four elements: understanding, use, reflection, and integration.

The first is to clarify the motivation behind using AI and identify the beneficial or detrimental effects of these tools. As far as foreign language writing courses are concerned, teachers should guide students to access AI tools and help them understand the situations in which AI is used to generate text. By combining specific writing cases in classroom teaching, using these tools to modify, discuss, and explain these modifications to AI generated texts, as well as stimulate reflection on the differences between students' own writing and AI writing, students can promote their learning.

The second is that teachers and students need to be able to access and use various AI tools, search for suitable tools from the proliferation of AI, identify functions, and assist with different tasks. When entering a more specialized AI operation, students need to clarify their task instructions on the one hand, and on the other hand, they need to have extensive exposure, operation, and observation of all possibilities of AI tools in advance. Therefore, in AI assisted writing teaching, teachers should guide students to continuously improve their optimization instructions for AI input, that is, to think and improve their own ideas for writing tasks.

The third is that teachers and students need to reflect on the text generation of AI tools. Speculative ability is one of the core competencies of talent. Although AI based text data training on the Large Language Model (LLM) can improve writing efficiency, the generated text content does not necessarily mean that it can be fully accepted. When using AI, teachers should guide students to think about the accuracy, reliability, advantages, and disadvantages of AI tool generated content from a dialectical, comprehensive, and critical perspective.

Finally, teachers and students need to use AI tools in a moral and ethical manner to integrate the generated content into their learning work. For example, teachers should guide students to annotate and cite the role of AI tools in their writing process. Especially as pioneers of fostering virtue, it is crucial for teachers to shape students' ethical understanding of how to use AI based technologies and provide information for future discussions between teachers and educational researchers on best practices in ethical use.

3.2 Teaching Practice

In writing teaching, reference can be made to using AI text generator platforms that focus on different functions and are specifically designed for a particular language. The services of these AI platforms include but are not limited to: The evaluation function based on the viewpoint orientation, theme, and emotion of the text, or the evaluation of essay scoring and readability; Synonymic rewriting function, which is to use rich vocabulary and diverse sentence types to provide rewritten paragraphs of the text; The modification function, which mainly involves providing suggestions for correcting the types of questions in the essay, including orthography, grammar, sentence style, and citation style; Or comprehensive functions, which is to quickly correct, polish, expand, and summarize; Interactive function, which is to produce text based on the operator's continuous input, adjustment, and optimization of instructions. During the teaching process, one or several AI tools can be selected to assist in the use of teaching design and objectives.

In response to the problems encountered in teaching non-universal language writing mentioned earlier, this article takes the teaching of German basic writing as an example and explores the teaching practice under the "AI+SPOC+BOPPPS" teaching model. The specific process is as follows:

- Pre-class guidance: teachers guide students to use online teaching platforms for independent learning.

(1) Teachers use online teaching platforms to introduce diverse and micro-lecture teaching resources related to the theme, such as micro lesson videos, images, links, and themed micro articles, to create learning contexts. At the same time, tasks such as topic discussions, practice tests, and group activities are set to drive students' thinking expansion through questions. Teachers use online teaching platforms to understand students' learning

progress and diagnose and analyze learning outcomes to determine classroom teaching strategies.

(2) Students can independently learn corresponding teaching resources through online teaching platforms, understand writing themes, clarify learning tasks, understand learning content, complete learning instructions, and prepare for offline learning.

During the pre-class preparation process, teachers can use AI according to the teaching task settings. AI can a sample essay that is more appropriate in terms of language, structure, and content through different instructions; According to the teaching plan, AI can also be used to grade and evaluate student exercises; Teaching instructions and steps can also be conveyed to students, enabling them to use AI to complete pre-written output or evaluations.

- In class supervision: teachers use the BOPPPS teaching model, to carry out six teaching stages. The specific implementation steps are as follows:

(1) Introduction (2 minutes): The teacher introduces the process and task segments of this course to students through methods such as blackboard writing, flowchart, and PPT.

(2) Learning objectives (5 minutes): The teacher uses the blackboard, flowchart, PPT, and other methods in the introduction section to present the learning objectives of the knowledge, literacy, and skills of this lesson, so that students can clarify and master the key and difficult points of this lesson.

(3) Pre-test (15 minutes): Teachers use the selection function of online teaching platforms to ask students questions; Alternatively, with the help of the platform's in class practice function, students can be tested in the form of test questions to assess their mastery of micro-lesson videos, themed micro texts, and other content before class.

(4) Participatory learning (40 minutes): This section focuses on student writing exercises and collaborative review by teachers, students, and AI. Students refer to the grading criteria for the professional CET-4 essay, which include content (6 points), language (6 points), and discourse structure (3 points), to provide ratings for the peer evaluation assignments assigned on the online teaching platform. Then they can choose any AI tool to review, observe and analyze the modification suggestions provided by AI, especially focusing on combining with AI review, comparing the grammar,

spelling, and punctuation problems that have not been discovered in one's own review, and filling in the gaps by searching for defects, in order to achieve the goal of language use, grammar training, and writing skill enhancement. Students replace or practice rewriting some sentence patterns in the review assignment based on the writing theme. By observing the rewritten example sentences provided by AI, students can identify the shortcomings in language use. Due to the fact that AI rewriting and imitation can provide a great deal of coherence and organization in discourse, with rich language tools, it can help students use conjunctions and clauses to enrich their practice of writing coherence, achieving the goal of increasing familiarity with the writing content. Teachers guide students to use AI dialogue functions to continuously optimize AI instructions based on different communication scenarios, background information, language styles, literary genres, and other characteristics, in order to think about using AI to complete a composition that meets the writing purpose. Based on instruction optimization, AI can guide students to start from the structure of their compositions and break down writing tasks, clarifying the key points of each section. Overall, in the process of participatory learning, students should correct writing deficiencies while emphasizing comparison. Teachers should guide and require students to think about the advantages and disadvantages of AI in writing output, and guide students to have a correct understanding of AI.

(5) Post-test (15 minutes): The teacher collects typical errors in student compositions during the participatory learning process through online documents, and uses the online platform's selection function to randomly ask students questions to test whether they can detect and correct errors.

(6) Summary (10 minutes): The teacher summarizes the knowledge points related to the concepts, structures, language means, and other aspects of the genre in this unit, and points out the shortcomings in the content, language, structure, and other aspects of student practice.

(7) Homework assignment (3 minutes): The teacher assigns corresponding assignments or tasks based on the writing theme.

- After-class Learning Promotion: Reviewing Assignments

(1) After class, students combine their classroom exercises and AI exercises, write, revise, and improve their essays according to the

homework requirements, and upload them to online teaching platforms.

(2) When teachers review essays, they can refer to the results of AI editing and select excellent essays from students for online sharing; Alternatively, teachers can use the human-machine interaction function of AI to generate text that meets the conditions. Teachers can process the text generated by AI and use it as a template for students to refer to.

(3) Teaching reflection: overall, the integration of AI in foreign language teaching is achieved through the interaction and correlation between teachers, students, teaching aids, AI technology, and the environment. This establishes a relatively stable procedural framework for teaching activities, and combines various forms of teaching structures and artificial intelligence applications. There is a non-linear connection between these two, with the ultimate goal of focusing on teaching objectives, transforming teaching models, and highlighting teaching effectiveness. [10]

The AI + SPOC + BOPPPS teaching model fully utilizes modern educational technology empowerment, connecting pre-class, in class, and post class in time, and flexibly utilizing communication tools, teaching tools, and network platforms in space. By constructing a three-dimensional and process oriented network teaching ecosystem, the model helps to solve the problem of poor student learning autonomy. Integrating ethical thinking and criticism into teaching, AI cannot achieve omnipotence, especially in the use of AI to assist foreign language writing. Some AI tools mainly focus on grammar modification, which cannot effectively identify stylistic and stylistic defects in compositions or paragraphs. Therefore, teachers should also guide students to scientifically, objectively, and neutrally understand and evaluate AI, AI technology, and the statement that "AI replaces foreign language workers".

In the field of foreign language writing teaching, the application of AI technology is manifested in evaluation, optimization, generation, and innovation. People use AI to promote the transformation of foreign language writing teaching throughout the entire process of teaching and learning. The use of AI assisted editing, rewriting, and dialogue by students can stimulate their learning motivation, enhance their learning interest and initiative, expand their learning breadth and depth, fully highlight their subject status, and cultivate their comprehensive literacy. The use of

AI assisted editing by teachers can alleviate teaching pressure, shorten the time for correcting homework, combine AI scoring, record and count common problems of students in the writing process, understand individual problems of different students, and develop corresponding strategies. The assistance of AI in the entire process of foreign language writing teaching can provide diverse process assessments, making the evaluation methods more diverse and the evaluation process more objective.

4. CONCLUSION

AI technology and the use of AI are one of the future development directions in education. Modern educational concepts are constantly changing and developing, teaching reforms are constantly being explored in depth, and the arrival of the AI era is driving the transformation of education from knowledge education to intelligent teaching. The use of AI assisted teaching transforms the key elements of traditional teaching from learners and teachers to the joint participation of learners, teachers, and artificial intelligence. AI technology can assist teachers in lesson preparation, assist students in previewing, promote classroom interaction, provide after-school tutoring, design homework, evaluate learning, diagnose learning situations, etc. It can bring different teaching and learning experiences to teachers and students, improve the teaching value of the classroom, and help students better consolidate learning outcomes.

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