Global Research in Higher Education
ISSN 2576-196X (Print) ISSN 2576-1951 (Online)
Vol. 8, No. 3, 2025
www.scholink.org/ojs/index.php/grhe

Original Paper

Research on the Integrated Online and Offline Teaching Model of Scientific English Writing Course from the Perspective of Sociocultural Theory

Linfei Zhu[1*] & Yuqian Liu[2]

[1] School of Foreign Languages, Xidian University, Xian, China

[2] Foreign Studies College, Northeastern University at Qinhuangdao, Qinhuangdao, China

Received: August 1, 2025 Accepted: August 12, 2025 Online Published: August 26, 2025

doi:10.22158/grhe.v8n3p9 URL:http://dx.doi.org/10.22158/grhe.v8n3p9

Abstract

Based on the integrated teaching model and sociocultural theory, researchers discuss scientific English writing course construction, taking the compulsory course offered by Xidian University as an example. It expounds the operation of the mixed teaching model of the course from three dimensions: "knowledge acquisition", "quality cultivation", and "ability building", aiming at understanding and analyzing the current situation of mixed teaching in scientific English writing course, and constructing new models for scientific English writing course by combining sociocultural theory, with the expectation of providing practical basis for integrated teaching in scientific English writing.

Keywords

Scientific English writing, mixed teaching model, sociocultural theory

1. Introduction

At present, English for Specific Purposes (ESP) has received extensive attention from scholars at home and abroad (Zhu & Shen, 2011; Dou et al., 2023). English for Science and Technology (EST) serves as a crucial subfield of ESP (Zhu & Shen, 2011). Scientific English writing reflects the characteristics of EST (Zhao & Dai, 2003), which is an important component of ESP. However, research on the integrated online and offline teaching model of scientific English writing courses is relatively scarce, and most methods for measuring students' performance focus on offline settings. Therefore, several issues persist, including outdated teaching content, insufficient vividness in instructional methods, and a lack of diversity in assessment approaches (Hu, 2024). From the foregoing discussion, it is evident that the innovation of scientific English writing courses—aimed at enhancing content appeal and

diversifying pedagogical approaches—warrants in-depth investigation.

With the advancement of Internet technology, educational informatization is accelerating (Peng, 2023). Consequently, the mixed teaching model—integrating e-learning with traditional face-to-face instruction—has emerged as a focal point in higher education reform (Yu, 2023). The mixed teaching model has established a new communication mechanism, which has rich learning resources, fully leveraging the students' dominant role and stimulating their enthusiasm and creativity for learning (Xie, 2022). Mixed teaching model is gradually emerging in university-level English teaching. However, the content of college English information-oriented teaching has not aligned with the demands of the times, and the quality of talent cultivation is difficult to meet the current needs of economic development and the market (Yu, 2023). Scientific English Writing course, a compulsory course for science and engineering majors, lays a solid foundation for students' future research work while being significantly impacted by information age dynamics (Hu, 2024). It should adapt to the interdisciplinary demands of modern academia and meet market demands. Therefore, how to apply integrated teaching models to scientific English writing courses is an urgent topic that needs in-depth exploration.

Integrated teaching model adheres to the concept of "Student-centered development" (Wang et al., 2023), aligning with Vygotsky's (1978) sociocultural theory. Specifically, the theory's mediation triangle structure, which positions learners as the core, resonates with the mode's emphasis on students' dominant role.

The case study teaching model is considered a highly effective reform approach at the classroom level (An, 2013). Therefore, this study conducts a teaching case analysis of the compulsory course *Scientific English Writing* at Xidian University, integrates sociocultural theory into academic English writing teaching, and applies it in actual teaching based on mixed teaching mode. It conducts empirical research on the proposed teaching mode to explore the innovative direction of the scientific English writing course from three dimensions: "knowledge acquisition", "quality cultivation", and "ability building".

2. Method

2.1 Course Construction

2.1.1 Basis for Course Design

The mixed teaching, which combines the advantages of online teaching and traditional classrooms (Yu, 2023), breaks through the limitations of learning space and time, thereby enhancing students' freedom in learning (Wang et al., 2023). In the early 21st century, research on mixed teaching of college English began to emerge in China. Currently, such research mainly consists of three typical models, namely, "mixed teaching model based on computer networking technology", "mixed teaching model based on micro-lectures, MOOCs and SPOCs", and "mixed teaching model based on mobile interaction technology" (Chen & Shen, 2024). This study adopts the second model, "mixed teaching model based

on micro-lectures, MOOCs and SPOCs". At present, domestic research on the construction of a mixed teaching model for the foreign language writing course mostly focuses on the traditional writing courses, with few studies focusing on the mixed teaching mode (Tian, 2023). Based on this, this study focuses on the case studies of the mixed teaching mode applied to on-campus scientific English writing courses, with the aim of providing practical cases for the course construction in the future.

Sociocultural theory emphasizes the core role of social and cultural factors in the learning process. Its core components include five parts: mediation, internalization, zone of proximal development, scaffolding, and activity theory (Zhang, 2024). The mediation triangle structure's concept in sociocultural theory (see Fig. 1) holds that human development and cognition rely on material or symbolic tools, such as language, as mediators. When it applies to teaching, learners in certain special learning contexts obtain knowledge through interactive activities with the help of others (including teachers and peers) and by using necessary learning resources (Vygotsky, 1978). Sociocultural theories and mixed teaching mode design have an inherent unity. This study adopts the mediation concept in sociocultural theories, integrates it with the school's positioning, and draws on the school's strengths in electronic information science. According to students' conditions, the study further applies sociocultural theories to the practice of mixed teaching mode to cultivate students' autonomous learning ability and continuously improve their cognitive ability. Starting from "knowledge acquisition", transitioning through "quality cultivation", and progressing step by step, it will ultimately achieve the goal of "ability building".

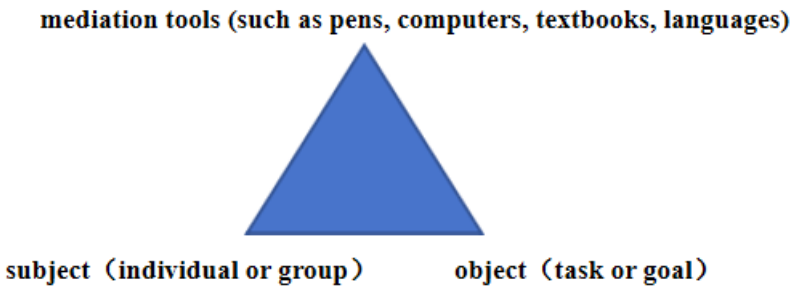

Figure 1. The Mediation Triangle Structure

2.1.2 Mixed Teaching Mode of Scientific English Writing Course from Perspective of Sociocultural Theory

Wang Yue (2014) examined the demand for academic English writing among non-English major postgraduate at Northeastern University. The results indicated that 52% of these postgraduates reported a strong need to improve their academic English writing ability. Therefore, this study is rooted in students' needs to enhance their practical reading and writing proficiency in scientific English, and further aims to build students' ability to analyze, evaluate and dialectically synthesize information with

the help of scientific texts (Li, 2016). Online learning not only helps students acquire knowledge points, but also helps them adapt to different cultures (Wang & Hui, 2024). Ultimately, the study seeks to foster the competence in cross-cultural academic communication.

This course aims to apply the concept of mediation proposed by Vygotsky (1978) to the mixed teaching mode of scientific English writing. It regards instructional language and objectives as mediating tools (Zhang, 2024), and incorporates students' professional knowledge and perspectives as cognitive objects. It incorporates reading and speaking tasks and combines the reading of scientific literature with the writing practice of scientific and technological papers (Li & Liu, 2013). Ultimately, the course aims to achieve the integration of reading, writing and speaking. The course evaluates students' scientific English writing abilities and the effectiveness of the mixed teaching model through writing tests, presentation reports, and in-depth interviews.

When the triangle structure is applied to the scientific English writing course, the teaching team uses MOOCs, SPOCs, learning materials, and the professional literature searched by students as mediation. The subjects are different learning groups according to students' majors. Combined with the course assessment system, the objective tasks are presented in the form of the application cases of course knowledge in professional literature, literature presentations and summaries for practical writing carried out by professional groups. Combined with the mixed teaching mode and guided by the mediation, the entire teaching activity completes interdisciplinary learning from knowledge to ability at the four levels of "remember, read, speak, and write" (Zhou, 2014), and creating a student-centered, task-driven mixed teaching model (see Fig. 2).

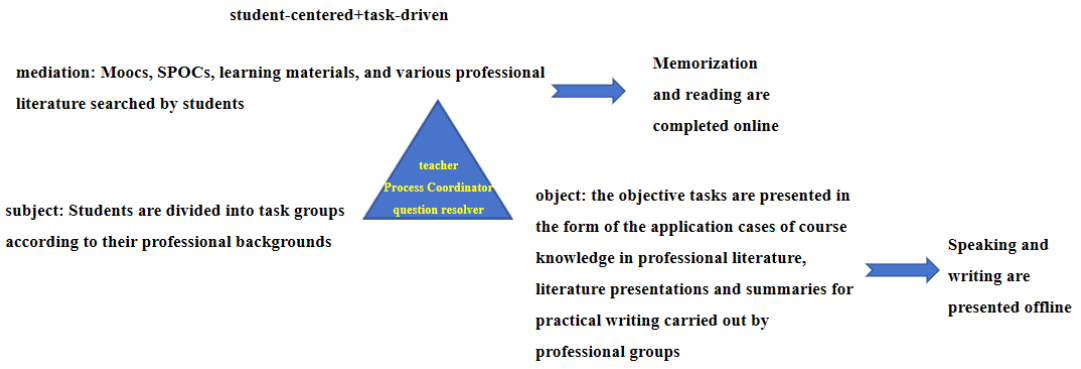

Figure 2. The Application of the Mediation Triangle Structure in the Scientific English Writing Course

Furthermore, this study combines the scientific English writing course with the mixed teaching mode. Relying on the institution's resource and based on the concept of "teacher-led and student-centered" (Chai et al., 2021), it explores solutions to the problem of low student participation (Hu, 2024).

The knowledge points of the scientific English writing course are numerous and diverse, while the classroom teaching time is limited (Tong & Xie, 2019), and students have different disciplinary backgrounds. Currently, the course has problems such as relatively monotonous textbook examples and a lack of integration with students' majors in learning materials (Liang & Gao, 2022). However, there are numerous professional vocabularies, grammar rules, sentence patterns, writing conventions, and framework requirements in scientific English writing (Qin, 2013), which are hard for students to master. In response to the characteristics of the course and students' learning situations, the course construction based on the mixed teaching mode mainly aims to solve the problems of scarce learning materials and students' insufficient practical abilities.

The study combines online passive input learning (such as "memorization" and "reading") and offline active output (such as "speaking" and "writing"). By introducing MOOCs and SPOCs, it examines knowledge point, builds capability and cultivates quality. Furthermore, teachers' evaluation and feedback ensure the effectiveness of circular learning.

2.2 Course Design

The teaching content of this course includes three parts: EST knowledge, scientific English reading and writing, and academic conference communication.

The first module of this course, "EST knowledge", aims to familiarize students with academic English vocabulary, syntax and text features through the study of grammar. This module integrates scientific vocabulary, syntax, tense, voice, and text structures through online MOOCs, SPOCs, and teaching materials. During online learning, students can master the core academic words in professional written texts—words widely used across various disciplines. Furthermore, this module assists students in understanding the characteristics and usage rules of several key grammatical forms in academic texts, to be able to interpret long and complex sentences in academic texts using grammatical knowledge, and to apply reading strategies to grasp the general idea of more challenging academic texts. Ultimately, it instructs students to familiarize themselves with the writing style of scientific English and to be capable of translating and writing single sentences at the academic level.

In the second module, "scientific English reading and writing", students focus on writing while using reading as a supplement, with both aspects complementing each other (Liu & Li, 2020). This module uses classic academic articles and international journal papers related to students' majors as models. Students are divided into major-based groups to read professional literature in their respective fields. Through extensive reading, students can achieve proficiency in professional literature (Hu, 2024). Building on this foundation, the course decomposes academic papers to gradually improve students' writing skills. This module combines online and offline learning. Teachers guide students to read, analyze, and master the specified writing formats and disciplinary norms through online SPOC discussion forums and offline classrooms. Students, in turn, integrate their professional knowledge to co-create learning materials and texts with teachers. This module adheres to the guiding principle of

"teacher-led and student-centered" instruction (Wang et al., 2023). By studying professional literature, students, under teachers' guidance, analyze targeted examples of the knowledge points covered in the first module, interpret the literature, and produce evaluative writing, thereby developing productive skills and critical thinking abilities.

The third module, "academic conference communication", is designed to enhance students' scientific English writing and expression skills. The course covers the various aspects in international academic exchange conferences, mainly including the presentation and discussion of papers at international conferences to assist students in understanding the characteristics of scientific English writing (Zhou, 2014). Students are organized to simulate international academic exchange conferences in the last part of this module. Mixed teaching mode emphasizes a student-centered teaching approach and mediation triangle structure in sociocultural theory, which posits that students serve as the main subjects. Therefore, this module designs that students are the main teaching subjects in practice, while teachers are the organizers, participants, and guides of the course activities, as well as the collaborators of students' learning. The main teaching methods include reference book study, online and offline group cooperation, and online and offline teacher guidance. Ultimately, students conduct practical exercises based on the learned content.

In the actual teaching process of the course (see Fig. 3), students and teachers work in parallel, engaging in cooperative circular learning from before class, during class, to after class. The first module and the second module are carried out simultaneously, with students and teachers engaging in cooperative circular learning from before class, during class, to after class. The learning of each EST knowledge point corresponds accurately to the relevant literature reading and tasks in the second module. The course determines the frequency with which each member of each group can present based on the number of students enrolled in the course. Generally, each person has 2 presentations. The third module is the stage of presenting achievements: based on the learning from the previous two modules, students integrate the literature read throughout the semester, write the abstract and framework of a professional paper, and complete the simulated academic conference presentation, report, and discussion.

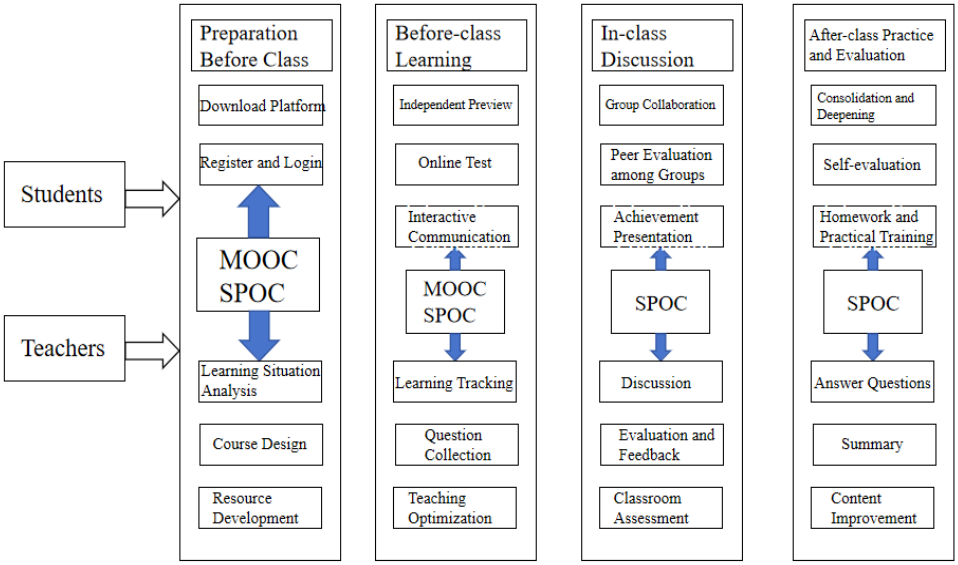

Figure 3. Teaching Process of the Course

3. Result

3.1 Curriculum Presentation

3.1.1 Learning Target

The study takes a unit entitled "Abstract and Writing Framework" as an example to analyze the effectiveness of scientific English writing course.

"Abstract and Writing Framework" is part of the comprehensive application stage in the course after the study of single sentences and grammar. It condenses the content and plans the outline for the thesis writing. This unit takes a total of 6 class hours to complete. In terms of knowledge sequencing, it belongs to the latter part of the course, which is close to the end of the learning process. It serves as the prerequisite for the presentation of the final task of the course. "Abstract and Writing Framework" is a key unit for capability building in scientific English writing course. It has high requirements from MOOC and SPOC material to professional literature selected by students. It requires the comprehensive application of text writing rules, evaluation and identification of literature quality, analysis of review literature information, in-depth exploration of scientific research content through teamwork, and knowledge sharing from multiple disciplines.

Therefore, this unit has three targets from the perspective of knowledge, ability and competence respectively (see Fig. 4). Students study the knowledge points of "Abstract and Writing Framework" through MOOCs and the textbook, and share opinions and doubts about the materials in discussion forums. Furthermore, the discussion forums will also cover knowledge of abstracts, paper frameworks, and key points for writing each part. In term of ability target, by observing the "abstract sentence analysis" level in literature reading, students collaboratively improve the reporting structure, enhancing

their abilities in analyzing, evaluating and synthesizing the information from the literature. Students develop cross-cultural and interdisciplinary qualities by cooperating on the set tasks thereby cultivating a spirit of cooperation. By working as a team, they delve into their professional field, complete presentations and reports to learn and share the materials they have found before class.

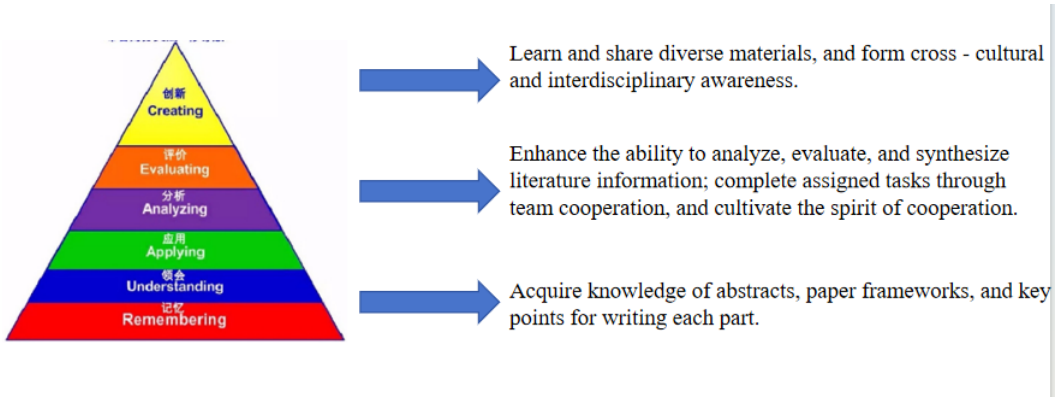

Figure 4. Targets in the Unit

3.1.2 Teaching Content and Resources

Video materials for the "Abstract and Writing Framework" chapter of the scientific English writing course are available on the MOOCs. Furthermore, reading materials for "abstract sentence analysis" can be found in SPOCs. During the construction of the unit, it aims to solve three problems. The first problem is how students can, in accordance with the "abstract sentence analysis" framework, analyze the structural components (such as research background, introduction, research methods, and research results) in their respective professional literature, summarize information from the literature, and dissect the key sentence patterns and textual rules. The second problem is how students integrate review information from popular science articles in their professional field, distill viewpoints, form personal opinions, and create a quasi-abstract review. The last problem in this unit is how students present their research direction and main professional issues to be addressed in the form of an abstract based on the current status of their personal research and requirements for conference presentations.

Before students select their topics, the teacher provides sample of science popularization text selection. It is required that article topics should closely align with the cutting-edge of national development and conform to the technical reports required by socialist development. The topics selected by students include "The First Person in Quantum Development", "China's Breakthrough in Artificial Starch Synthesis Technology", "Progress in Huawei's HarmonyOS Chip", etc. Through reading and sharing these materials, students should form their own opinions and gain scientific research inspiration. Furthermore, the excellent case presentation materials from previous classes are provided for students to refer to. These materials include the literature resources selected by previous students and the PPT

files of their group presentations. This enables mutual learning and improvement among students.

Teams should collaboratively complete the extraction of resources for the "summary sentence step", which should be presented in the form of a shared document. This process reflects learner's collaborative teaching process and should be made available for the entire class to read and study.

This unit is well-structured based on the mixed teaching mode and sociocultural theory. The supplementary learning materials play a guiding role in practical application. The actual thesis cases of teachers and the resource library jointly built by current and previous students are outcomes of practical application. Meanwhile, the sharing and mutual evaluation of popular science literature among groups also provide information materials for the formation of interdisciplinary exchanges. This embodies the sociocultural theory, using the summary sentence steps as a mediating tool, with the object of analyzing textual summary information and producing personal summary writing, combined with students' (subject) efforts, to achieve the teaching goals of this unit.

3.1.3 Teaching Process and Methods

The teaching process of this unit is carried out around the unit teaching objects. Based on the teaching concept of "efforts before class, effectiveness during class, and reflection after class" and mixed teaching mode, the class is overall designed into three stages: the pre-class stage, the teaching stage, and the post-class stage (see Fig. 5).

Before Class	Watch MOOC videos (online) and learn with supplementary textbook answer questions and resolve doubts in the MOOC discussion area (online)	Take MOOC unit tests (online), conduct professional text reading and analysis based on the "Abstract Step Analysis" learning materials in SPOC	Divide into groups by major for preliminary SPOC online mutual evaluation (online)
In Class	Focus on sorting out knowledge difficulties based on the scores from the MOOC and SPOC (offline)	Conduct offline discussions within the group, improve literature cases, and select group representatives for explanation (offline)	Group representatives give professional thesis writing summary reports, and get mutual evaluation among students and teacher feedback (offline)
After Class	Consolidate knowledge in the MOOC discussion area, SPOC discussion area, and class online community (online)	Combine personal research directions to write abstracts (offline)	Conduct mutual correction and evaluation within the group, and teacher evaluation and feedback (online)

Figure 5. Three Stages in the Class

Before the class, the main goals were knowledge acquisition and self-assessment. Students watched MOOC videos online, read textbook materials, engaged in communication with teachers and students in MOOC discussions and Tencent groups to solve doubts, and completed unit tests. Based on "abstract sentence analysis" in the SPOC discussion platform, they conducted literature reading and selected

cases, forming the "mediation" part of sociocultural theory. The subject, which is mentioned in sociocultural theory, is students. They were divided into learning groups according to their majors, and they conducted literature exchanges and discussions within the groups to complete the knowledge acquisition stage and achieve the presentation of the object, which corresponds to the mediation triangle structure.

Flipped class set quality cultivation and ability building as the main object. Teachers sorted out the key and difficult points based on the scores on MOOC platform and gave key lectures in class. Groups discussed and cooperated offline to refine the details of the reports. Group representatives came to the stage to analyze the writing framework of the selected subject text, including "research background, introduction, research methods, and research results". After the presentation was completed, members of other groups asked questions and made comments, and the presentation team provided professional answers. Teachers provided feedback and evaluations based on the system construction and presentation effect. The results of the knowledge acquisition test in the abstract section can be retrieved from the MOOC. Through the specific scores, it can be seen that the difficulties students face in mastering knowledge are the conventional sentence patterns of the abstract, the use of active and passive elements, as well as tenses, etc.

During the class, the teacher provided more material texts for this part to explain and help students understand the writing norms of abstracts. Students reported the selected specific literature, analyzed each step of the sentence structure, and summarized the text information, conveying key points to other students and sharing their personal opinions. Other group listeners asked questions about the text and examples, covering various aspects such as knowledge points, content, and viewpoints, achieving interdisciplinary communication. The teacher provided comments and feedback on the accuracy of the knowledge examples, the completeness of the sentence structure analysis, and the viewpoint level. Meanwhile, the assessment was completed based on the quality of the literature presentation, the strength of group cooperation, the display on the podium by the speakers, and the supporting evidence for the summary of the presentation's content and viewpoints.

After class, students can post questions and engage in discussions in the MOOC discussion area under the topic of the current unit to review and strengthen their case study learning. Meanwhile, they need to complete one of the assessment tasks for this unit. Based on their current research status, they should write an abstract or make a content summary, submit it online, and then receive feedback from the initial evaluation by their group and re-evaluation by the teacher. This feedback will serve as a basis for students' iterative learning. When conducting personal research summaries or reviews of professional field development, students should delve deeply into their own professional fields to enhance their understanding of the disciplines. In cross-disciplinary evaluations, they should complete interdisciplinary exchanges and cooperation, and experience the rigor of science.

3.1.4 Evaluation and Feedback

The assessment of this unit consists of the online course unit tests before class, discussions in the discussion area, classroom presentations, and one of the final assessment tasks for the semester, namely "abstract writing" (see Fig. 6).

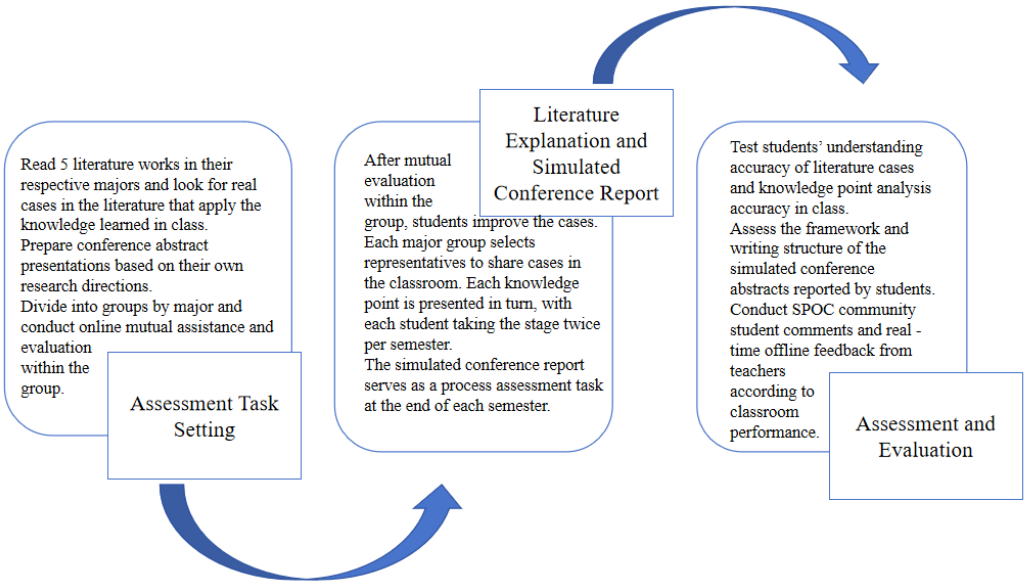

Figure 6. "Abstract Writing" Test

The evaluation consists of online and offline learning, placing students as the top priority. The teaching evaluation system of this unit is based on MOOC and SPOC to monitor students' learning dynamics. It also relies on MOOC tests and the number and content of student discussions to adjust teacher's teaching content and pace. The learning progress can be observed from the number of online learners. Through the number of discussion topics and participants on the MOOC platform in the unit, it is possible to see the students' engagement in the learning content and task assignments of this unit, thereby conducting teaching reflection and improving the teaching design (see Fig. 7 and Fig. 8).

Figure 7. Number of Online Learners

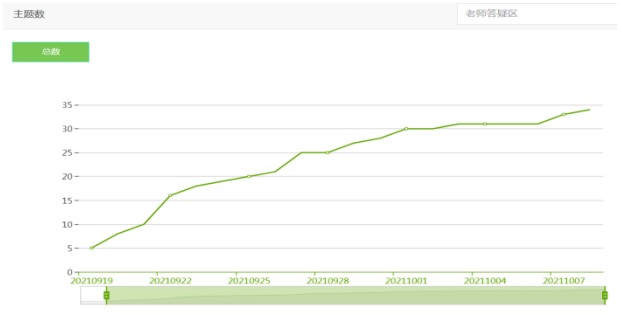

Figure 8. Number of Discussion Topics

3.2 Curriculum Evaluation

The classroom activities of the unit are carried out in full alignment with the course objectives (see Fig. 9), integrating the learning of the four dimensions of "memorization", "reading", "speaking" and "writing" in the study of scientific and technological English both online and offline. Meanwhile, it has achieved the acquisition of writing framework knowledge points, the ability to analyze and evaluate review literature, the cultivation of teamwork spirit, the in-depth exploration within the discipline, and cross-cultural and cross-disciplinary communication.

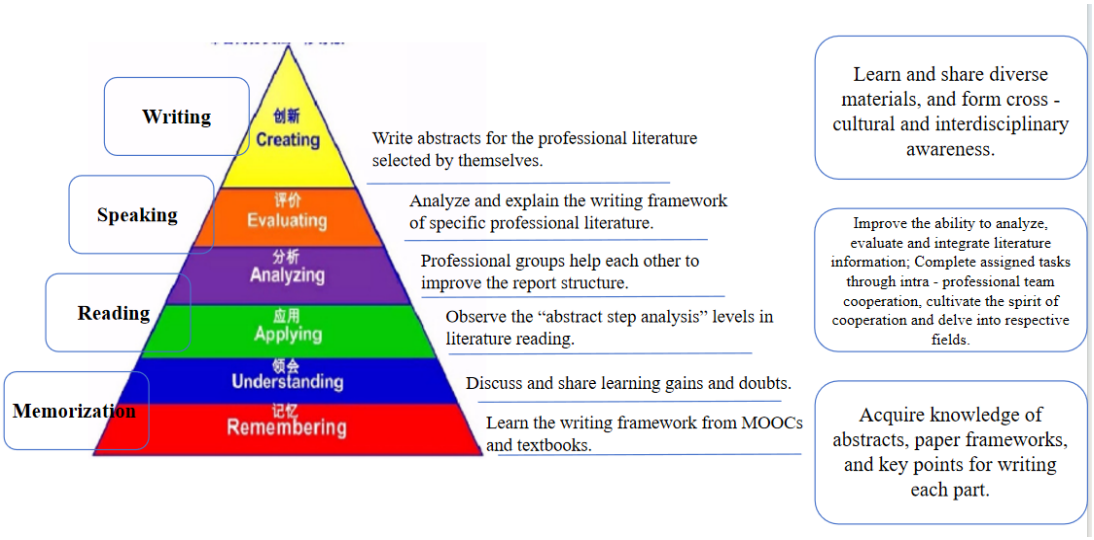

Figure 9. Course Objectives

Due to the selection of sample materials for popular science texts, the unit teaching activities integrate scientific and technological reading materials with the course's ideological education, enhancing the students' national sense of mission, responsibility and self-confidence, and striving to cultivate the new generation of scientific and technological workers with ideals, pursuits and responsibilities as expected by the Party Secretary. Ultimately, students can make the expected contributions as scientific researchers in the globalized competitive environment. Starting from the practical application needs, the practical teaching that integrates knowledge acquisition, quality cultivation, and ability building is carried out. Based on the learning materials, learners independently extract viewpoints and analyze professional texts, forming relevant abstract writing within the professional field, leveraging the learning advantages of the flipped classroom under the mixed teaching mode and meeting the individualized learning requirements of students. The "cooperative teaching" model is task-oriented. The teacher acts as the activity coordinator, while the students are the subject of learning and contributors of learning materials, which is in accordance with sociocultural theory. The language advantages of the teacher and the professional advantages of the students are combined to complete the

actual abstract writing tasks.

The establishment of the mixed teaching model for scientific English writing based on sociocultural theory focuses on the following aspects and key points: by changing the course concept, a series of rules for tool application and task rules for professional knowledge are designed; a collaborative teaching model involving learners is introduced (such as group collaboration, cooperative discussion, mutual evaluation among learners, and special presentations), a scientific writing activity system is created; and the development of academic writing skills is achieved based on continuous, intensive, and consistent language-mediated activities (such as designing a large number of professional literature reading tasks in the teaching system, giving special presentations, writing completed texts, and achieving the combination of reading, writing, and speaking through reading promotion of writing).

By leveraging the mediation triangle structure in sociocultural theory, based on high-quality online resources and platforms, and using language knowledge learning as the mediation, with practical application and creation related to the discipline as the object, a "student-centered" task-driven classroom is constructed. A learner-conducted teaching model is established, relying on online communication platforms (such as SPOC and Tencent groups) to divide groups by profession, transforming the disadvantage of difficultly in unifying teaching materials due to the diverse professional backgrounds of students into an advantage of cross-disciplinary communication. The selection of learning materials follows the cutting-edge developments and hot topics in science and technology in the socialist construction. In the learning of topics such as "quantum communication", "self-developed supercomputing", and "Huawei chip development", students can understand the technologies needed for national development, strengthen their research responsibilities, deepen their sense of patriotism, and better understand the connotation and significance of "science has no borders, but scientists have countries".

The learner-centered teaching model proposed under the sociocultural theory in the teaching reform can be applied to the "academic English courses" in other engineering and science colleges. It can address the issue of selecting teaching materials for students from multiple majors, while also integrating students' professional knowledge from different majors and overcoming the shortcoming that foreign language teachers lack a scientific and technological knowledge background. A mixed teaching design scheme under the framework of sociocultural theory carried out in Xidian University can give an insight to other universities which share the same situation. Through the joint efforts of teachers and students to build the classroom, with language as the mediation, and with the task of students' in-depth study of their disciplines and cross-cultural and interdisciplinary exchanges as the object, a student-led curriculum system can be constructed.

4. Reflection and Insights

In future teaching, reading, speaking and writing should be integrated as a whole. Currently, academic English writing teaching mostly follows the theory of formal linguistics, conducting language analysis with academic characteristics, identifying language components, and focusing on grammar and sentence translation. The summary and refinement of academic paper style and professional knowledge are relatively insufficient. There is a disconnection between "learning" and "application". Under the mediation triangle structure in sociocultural theory, students, as learning subjects, take the absorption and expression of professional knowledge as the cognitive object. The relationship between "learning" and "application" is closer for students when the mediation triangle structure is adopted in teaching. This study introduces a large number of professional articles into the teaching, combining the structural analysis of professional articles, the transmission of viewpoint information, the imparting of language knowledge and writing ability, so that writing, reading and speaking are integrated, achieving the combination of reading, writing and speaking, and strengthening the integrity of language as a cognitive tool rather than a fragmented single language skill.

Secondly, a cooperative teaching model should be implemented. The current academic English writing teaching still follows the method where the teacher explains language expressions and grammar, and students memorize and practice accordingly. The teaching method is monotonous and lacks variety. According to sociocultural theories, language is fundamentally social, and lies in the interaction and communication between people. This study adopts a teaching model where teachers and learners collaborate. Learners introduce teaching materials, organize project collaborations, conduct cooperative discussions, engage in mutual evaluations among learners, give special presentations, and engage in professional writing, etc. This approach aims to cultivate students' autonomous learning abilities and critical thinking skills, and promote the development and change of language.

5. Conclusion

Based on the perspective of sociocultural theory and the mixed teaching mode, Xidian University has carried out the exploration and practice of the course of scientific English writing. Through MOOCs and SPOC forms, the study guides students to become the subjects of the classroom, and guide them to freely form groups to choose scientific and technological reading materials, and combines passive input with active output. Furthermore, from the three dimensions of "knowledge acquisition", "quality cultivation", and "ability building", the study has progressed step by step to effectively enhance students' practical abilities and improve their comprehensive qualities, providing the following practical ideas and bases for the mixed teaching of the scientific English writing course: 1) In future teaching, reading, speaking and writing should be integrated as a whole to strengthen the integrity of the language itself. 2) In the process of mixed teaching, courses should carry out cooperative teaching models to cultivate students' autonomous learning ability and enhance their language literacy.

References

An Outline of Scientific Writing. (2007). Beijing: Foreign Language Teaching and Research Press.

An, G. (2013). Learning-centered Lesson Study. *Teacher Education Research*, *25*(02), 72-77.

An, G. (2019). The Construction and Practice of Learning-Centered Lesson Study Model. *Global Education*, *48*(10), 96-106.

Chai, S., Zhang, M., & Zhao, Y. (2021). A Tentative Study on Blended Learning of English-Major ESP Courses in Lanzhou University. *Journal of Hubei Normal University (Philosophy and Social Science)*, *41*(03), 100-105.

Chen, S., & Shen, T. (2024). Construction of College English Blended Teaching Models and Its Reflection. *Heilongjiang Higher Education Research*, *42*(04), 81-88.

Han, S., & Wang, J. (2010). Diverse Thoughts on Academic English Writing Teaching for Non-English Major Graduate Students. *Academic Degrees & Graduate Education*, (08), 45-49.

Hu, Z. (2024). Investigation on the Teaching Reform of "Subject Science and Technology English Writing". *Modern English*, (04), 79-82.

Li, D., & Liu, Y. (2013). Research on the Modern Teaching Mode of "English for Science and Technology" Course. *Journal of Language and Literature Studies*, (03), 110-112.

Li, Q. (2016). The Practice of Reforming the Writing Course for English Majors from the Perspective of Sociocultural Theory. *Journal of Heilongjiang Vocational Institute of Ecological Engineering*, *29*(04), 121-122.

Liang, Y., & Gao, Z. (2022). Research on the Development Path of English Major in Colleges and Universities of Science and Technology under the Background of New Liberal Arts. *Education and Teaching Forum*, (49), 70-73.

Liu, Q., & Li, Z. (2020). A Preliminary Study on the Hybrid Teaching Model of Technical English Writing. *Modern English*, (05), 19-21.

Luo, R. (2014). An Exploration of Discourse Interaction between Teachers and Students in Foreign Language Classrooms Based on Social and Cultural theories. *Theory and Practice of Contemporary Education*, (10), 104-106.

Mind in Society: The Development of Higher Psychological Processes. (1978). MA: Harvard University Press.

Peng, H. (2023). The Application of Blended Teaching Mode in the Teaching of Specialized English. *China Plastics Industry*, *51*(04), 194.

Shen, Y., & Zhu, M. (2011). Analysis of the ESP Textbooks Published in China. *Languages for Specific Purposes*, *2*(1), 97-106.

Tian, L. (2023). Research on the Construction of Blended Teaching Model of Foreign Language Writing from an Ecological Perspective. *Renmin University of China Education Journal*, *2*, 58-68.

Tong, Y., & Xie, W. (2019). Teaching Practice and Thinking of Thesis Writing for Engineering Postgraduates. *Education and Teaching Forum*, (21), 256-257.

Wang, L., Xue, H., & Gao, Y. (2023). A Practical Study of Mixed Teaching Mode Based On Flipped Classroom. *International Conference on Education Development and Studies*, *4*, 43-46. https://doi.org/10.1145/3591139.3591149

Wang, X., & Hui, L. (2024). Buoyancy and Engagement in Online English Learning: The Mediating Roles and Complex Interactions of Anxiety, Enjoyment, and Boredom. *System*, *125*, 1-14. https://doi.org/10.1016/j.system.2024.103418

Wang, Y. (2014). Academic English Writing Teaching Model for Graduate Students Based on Demand Analysis. *Journal of Shenyang Normal University (Social Science Edition)*, (1), 133-135.

Xie, T. (2022). Research on the English Hybrid Teaching Model in Local Colleges. *China Fruits*, (01), 125.

Yu, J. (2023). Online and Offline Mixed Teaching Mode of College English. *Journal of Shanxi University of Finance and Economics*, *45*(S2), 258-260.

Zhang, L., & Sun, Y. (2014). A Sociocultural Approach towards EFL Writing Curriculum Transformation. *Foreign Language World*, (05), 2-10.

Zhang, Y. (2024). A Study on College English Teaching under the Guidance of Sociocultural Theory. *Modern English*, (10), 17-20.

Zhao, X., & Dai, W. (2003). A Study on the Stylistic Awareness of College Students' English Writing. *University Education Science*, (03), 54-57.

Zhou, M. (2014). The Importance of Postgraduate Courses in English for Academic Purposes—Inspirations from the Practices of Universities in the U.K. *Journal of Graduate Education*, (01), 84-90.