

Innovation of teaching Chinese as a foreign language under the integration of technology-Taking the application of blended learning based on flipped classroom as an example

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Abstract: With the improvement of China's comprehensive national strength, more and more foreigners are learning Chinese. In order to develop teaching Chinese as a foreign language (TCFL) and bring more vitality to this young discipline, this paper integrates technology by introducing the flipped classroom and blended learning into TCFL. The flipped classroom has clear implementation methods, which can effectively extend learning time. Combined with the guiding principle of balancing teaching and learning in blended learning, and based on the adaptability analysis of the subject, the paper combines more traditional Chinese teaching models such as the 3P teaching model and task-based language teaching. The blended learning model based on the flipped classroom is applied in the teaching of Chinese as a foreign language. The implementation of the new teaching model reflects the deep integration of teaching content, teaching methods, and technical support, demonstrating the concept of Technological Pedagogical Content Knowledge (TPACK) in integrating technology into subject teaching. Meanwhile, the benefits brought by the innovation of teaching models under technological integration are evident, and in today's era, it is clear that integration of technology and teaching exploration is the necessary way to optimize the teaching process. The application of this model in the class of TCFL in some university shows that it is true and effective, and the classroom feedback is good, which is an innovation of TCFL worth promoting.

Keywords: Technological integration, Technological Pedagogical Content Knowledge (TPACK), Flipped classroom, Blended learning, Teaching Chinese as a foreign language (TCFL)

1. Introduction

Foreign language learners have the particularity of distance learning, which is suitable for online remote teaching. However, despite the increasing number of overseas students, they still choose to study Chinese in China. Experiencing Chinese culture is one aspect, while traditional face-to-face classrooms also have irreplaceable aspects. Data analysis has found that blended learning, combining online and offline elements, is more effective than traditional face-to-face teaching or purely online learning^[1]. In recent times, blended learning has become even more popular due to its adaptability to the post-COVID-19-pandemic era. This article discusses the characteristics of flipped classrooms and blended learning, combining them with the characteristics of Chinese language courses for foreigners and commonly used traditional teaching methods for Chinese as a foreign language. The summarized ideas are applied to actual Chinese language teaching, providing a full process of applying flipped classroom-based blended learning in Chinese language classrooms. Flipped classrooms and blended learning are products of educational informatization. The innovation process of new teaching models incorporates intangible technological means, truly reflecting the concept of TPACK. At the same time, continuous reflection and summarization in the innovation process bring about model innovations in Chinese language teaching through technology.

2. Theoretical Analysis

When discussing technological integration, one cannot ignore the concept of Technological Pedagogical And Content Knowledge (TPACK), formally proposed by Mishra and Koehler^[2]. TPACK is based on Shulman's PCK concept, attempting to capture some basic qualities of the knowledge teachers need for technological integration in teaching. It solves the complexity, multiplicity, and situational nature of teacher knowledge, viewing the relationship between technology, pedagogy, and content in specific environments^[3]. The teaching process of flipped classrooms and blended learning perfectly embodies the process of integrating technology, pedagogy, and subject matter in TPACK. Flipped classrooms require students to self-study classroom teaching content before class so that they can discover and solve problems during class, achieving thorough understanding.

Flipped classrooms require students to self-study classroom teaching content before class so that they can discover and solve problems during class, achieving thorough understanding. The book "The one world schoolhouse: education reimagined^[4]" mentions that we cannot evaluate a student's knowledge mastery solely based on a "Swiss cheese" knowledge system, which helps us better understand flipped classrooms. Regarding blended learning, Singh & Reed^[5] propose five "appropriates" which effectively interpret the concept of blended learning. Blended learning combines the advantages of traditional learning methods and digitized networked learning while seeking "appropriateness" demonstrating both teacher-led and student-driven active, positive, and creative learning processes^[6].

The Flipped classrooms are a new form of "blended learning"^[7] Indeed, flipped classrooms integrate online and classroom learning, change the roles of teachers and students, fully embodying blended learning strategies^[8], and to some extent, "flip" the way we perceive blended learning. Someone use the common American term "Flipped House" to understand flipped classrooms, considering them as a series of innovations in traditional classrooms^[9]. Simultaneously, as understanding and practice of teaching models deepen, people increasingly realize that a single model cannot meet the needs of complex teaching^[10]. For different subjects, teachers begin to adopt different strategies for teaching and continuously promote teaching reform based on student feedback^[11]. The new blended learning model based on flipped classrooms enters everyone's field of vision, breaking the traditional teaching model of single form, fixed content, and delayed feedback, allowing teachers, students, online platforms, and real classrooms to interact, depend on, and transform each other, integrating learning inside and outside the classroom^[12]. A successful flipped classroom should be such a blended teaching model with offline dominance and interactive/collaborative feature^[13]. Based on flipped classrooms, blended learning optimizes flipped classrooms and concretizes blended learning, bringing new attempts to educational informatization.

3. Objectives of the Study

Through the integration and innovation of the commonly used language teaching mode, flipped classroom and blended teaching, the implementation process of TCFL is strictly controlled, including the analysis of students' learning situation, the design and production of course resources, etc., technology is applied in every link before, during and after class, so as to form the innovation of TCFL under the integration of technology, and its feasibility can be verified. It is proved that technology integration means can find a new teaching mode suitable for TCFL, and its teaching exploration process can also be a certain reference for future Chinese as a foreign language teaching workers.

3.1. Feasibility Analysis

The blended learning model based on flipped classrooms is consistent with the teaching principle of "precise explanation and extensive practice" in Chinese language teaching for foreigners. Its form helps students understand and apply language and cultural knowledge, promote the development of listening, speaking, reading, writing skills, and language communication skills, and the teaching objectives are consistent with those of Chinese language and culture teaching for foreigners^[14]. This is manifested specifically in five aspects: role adaptation, time adaptation, technology adaptation, demand adaptation, and environment adaptation. The following will briefly elaborate on these five aspects for international students in some university in Zhejiang, China.

Role adaptation: The life of international students is inherently an open process, and such learners are more psychologically prepared for new teaching models.

Time adaptation: A random sample survey of 50 foreign students at the university showed that 90% of them are willing to spend more time learning Chinese, while also expressing concerns about the inadequate effectiveness of self-study during leisure time.

Technology adaptation: The university's classroom learning environment can support the smooth implementation of flipped classrooms, and international student dormitories are equipped with computers to support online learning. Demand adaptation: For international students studying in China, learning Chinese is a prerequisite for studying Chinese culture, thus possessing a strong learning motivation. Environment adaptation: The university's Chinese language classrooms have always adopted small class teaching with fewer than 20 students, creating a good teaching environment for implementing flipped classrooms.

In summary, the new teaching model is feasible in Chinese language classrooms for foreigners, and with reasonable planning, better teaching outcomes are expected.

3.2. Model Integration and Innovation

Common teaching models used in Chinese language teaching include the 3P teaching model and the task-based language teaching model, both of which are classic communicative language teaching methods under the background of communicative teaching theory. The 3P teaching model, using the approach of "Presentation-Practice-Production" combines language learning and practice more effectively, making it a very simple and efficient language teaching model. Task-based language teaching, which is student-centered with clear learning objectives, believes that knowledge teaching is closely related to task teaching^[15], emphasizing the purposefulness of activities and the idea of "learning by doing." Blended learning based on flipped classrooms integrates these two models, allowing teachers to organize classroom activities based on tasks, including pre-task, task cycle, and post-task stages, providing teachers with more ideas for organizing classes. The 3P teaching model not only clarifies the "presentation" before class, which is self-study of language knowledge points, and the "practice" during class, which involves language practice through activities, but also leads to the "production" after class, which involves communication application and consolidation. This three-stage classroom is different from the widely accepted pre-class and in-class flipped classroom teaching model proposed by Robert Talbert^[16] but is more suitable for language learning after adapting to actual needs, helping to enhance morpheme awareness, reduce or manage cognitive load, and promote Chinese language learning^[17]. Table 1 outlines the process and specific three stages of blended learning model for Chinese language teaching based on flipped classrooms.

Table 1: Generation of the Blended Learning Model for Chinese Language Teaching Based on Flipped Classrooms

	Flipped Classroom	Blended Learning	3P Teaching Model	Task-based Language Teaching	Based on Flipped Classroom Blended Learning
Pre-class	Knowledge learning	Familiarization of teaching content			Knowledge learning (Presentation)
In-class	Classroom activities, teacher Q&A	Expansion of learning content under teacher guidance	Presentation	Pre-task stage	Organizing activities (based on task-based practice and expression)
			Practice	Task cycle stage	
Post-class		Review and consolidate knowledge points	Production	Post-task stage	Practice consolidation (Production)

The integration of teaching models enriches blended learning based on flipped classrooms. In the 3P teaching model, the "presentation" is incorporated into pre-class instructional videos "practice" is conducted during class, and naturally, there is a "production" after class. However, in-class activities can be distracting, and to avoid turning classes into "review classes" or "free practice classes"^[18], integrating task-based language teaching with clear purposes can standardize the entire process. While seeking appropriateness in model integration, gradually integrating practical teaching methods is essential to fully leverage the advantages and effectiveness of each teaching model^[19].

3.3. Resource Design and Production

The textbooks used for this Chinese language course are "Developing Chinese" Intermediate

Comprehensive I and Intermediate Comprehensive II published by Beijing Language and Culture University Press, presented in the form of micro-lessons for pre-class teaching resources. Regarding video content, the introduction of new vocabulary before each lesson, which forms the basis of each lesson's knowledge, is selected and suitable for presentation in the form of micro-lessons. As for the video duration, referring to the suitable micro-lesson duration summarized by Hu Tiesheng&Zhou Xiaoqing^[20] and combining it with the arrangement of course content, the duration of each instructional video is predetermined to be within 10-15 minutes.

The production of micro-lesson videos emphasizes the importance of details. Taking this video production as an example, firstly, to provide students with a visual experience and familiarity corresponding to the textbook, the cover of the original book, course title, school logo, and related elements will appear at the beginning and end of the video. Additionally, different modules of content such as new words, pinyin, word type annotations, word meaning explanations, common word phrase methods, and sentence formation are presented in different font sizes and colors, and a uniform approach is adopted in all subsequent micro-lesson productions, allowing learners to perceive a one-to-one correspondence between content and form for easy memorization. Furthermore, commonly used phrases in daily life are selected for sentence formation in the courseware to motivate students for post-class practice; visually impactful and interesting animated images are chosen to prevent boredom and deepen learners' impression of related learning content during study. Finally, several reflection questions are interspersed throughout the entire video viewing process, such as when explaining the word "retirement," prompting students to consider questions such as "What is the retirement age in your country? How high is the pension? How do retired people spend their later years?" where the three terms "retirement age," "pension," and "retired people" are mentioned earlier. Continuously reinforcing the memory of word groups while inserting reflection questions into the instructional video production process also serves to assess whether students are watching the videos attentively.

The design and production of teaching resources are the most time-consuming and labor-intensive steps in implementing new teaching models. Due to the unfamiliarity of Chinese language teachers with curriculum informatization, cross-disciplinary cooperation can effectively address this issue. Chinese language teachers provide teaching content, educational technology assistants provide technical support, and both parties discuss teaching methods together to enhance informationization capabilities with subject characteristics. This will be further detailed in the "Cross-disciplinary Cooperative Teaching" section.

3.4. Implementation Process Analysis

The implementation process flowchart of blended learning based on flipped classrooms in the field of Chinese language teaching is shown in Figure 1, as mentioned earlier, the preparatory work in the early stage shown in the chart is indispensable. The specific implementation steps consist of three stages: pre-class, in-class, and post-class, reflecting the core content of this model and corresponding technological means.

The target students are 15 international students of the university. The course content is Intermediate Chinese Synthesis (I) and Intermediate Chinese Synthesis (II). Since 4 of the 15 students did not attend the course fully, 11 students effectively participated in the course.

Preparation work before implementation, in addition to overall course design and planning, includes determining the content of pre-class learning, producing relevant video resources, and uploading them to the learning platform. For overseas students, it is essential to allocate specific time for them to familiarize themselves with the course and the learning platform. At the initial stage of implementing the new teaching model, students are introduced to the three stages of the new classroom, the differences between the new and traditional classrooms, and the operation of the Moodle learning platform. Under the new teaching model, knowledge learning is completed in the preclass stage, thus freeing up teaching time during the in-class stage, making classroom activities more diverse and flexible. However, if students do not actively participate, the new classroom will be challenging to optimize teaching. Therefore, teachers need to constantly monitor student status to adjust course progress and activity arrangements accordingly. This poses a significant challenge to teachers, as encouraging students to think, ask questions, and propose correct questions at the right time is often more challenging than finding the right answers after asking questions^[21]. As teachers introduce the new teaching model into Chinese language teaching, they must continuously improve the new teaching model during the course progression to better meet the practical needs of the classroom.

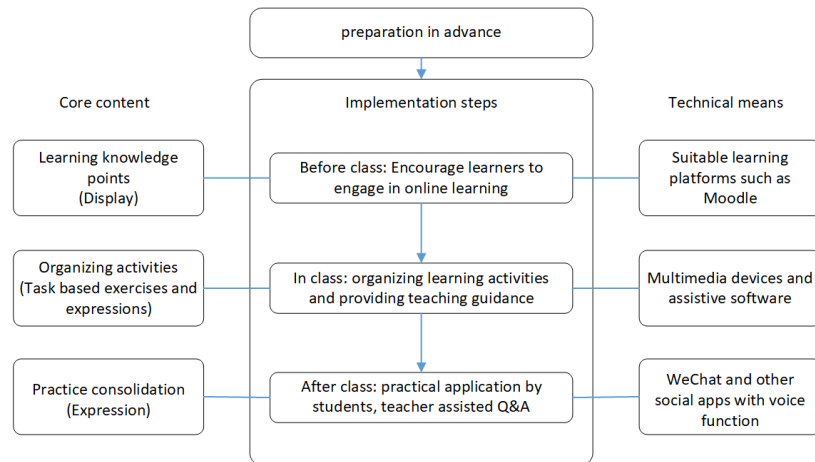


Figure 1: Implementation Process Flowchart

Formal launch of the new Chinese as a Foreign Language classroom starts with urging students via WeChat to enter the Moodle platform for pre-class learning. Once the habit is formed, the new teaching method can proceed smoothly. In the first few minutes of each class, the teacher engages in casual conversation with the students in Chinese on everyday topics. For example, on Mondays, the teacher might ask, "Did you have a good weekend?" and further stimulate discussion based on the students' responses. Additionally, discussing good TV shows allows students to briefly introduce the plot, share the names of the shows for others to explore later, enhancing not only their oral expression but also class atmosphere. These "chats" not only improve students' oral skills but also liven up the class, facilitate teacher-led activities, and may even leave behind intangible learning resources.

Developing activities during the class is crucial. Through overall implementation, activities like "Guessing Words from Pictures" "Group Discussions" "Storytelling" and "Students as Teachers" have proven effective in fostering a conducive learning environment while exercising language skills in a relaxed and enjoyable manner. These activities often expose students' language errors, allowing timely corrections from the teacher. Consequently, students show more enthusiasm, with many daring to use idioms they previously learned to "show off" Teachers also expand class content based on students' varied performances, providing more opportunities for vocabulary explanations and classroom discussions.

Post-class language practice is equally important in the process of learning Chinese. Teachers can leverage the target language environment to create opportunities for language use and provide practical guidance through communication platforms. In this class, WeChat, a social app with voice functionality, is utilized. Students not only share good music and movies but also inquire about unfamiliar words encountered in daily life. The teacher encourages other classmates to participate in discussions and offer assistance, and any unresolved issues receive guidance from the teacher. Such WeChat groups aid in post-class language learning, unexpectedly providing a platform for seeking language help and fostering a sense of belonging among overseas students. As students become increasingly vocal in the group, their classroom performance becomes less inhibited.

3.5. Technology Integration: Interdisciplinary Collaborative Teaching

In the study on the Technological Pedagogical Content Knowledge (TPACK) framework and technological integration self-efficacy of foreign language teachers, someone found significant correlations between university teachers' technological knowledge levels, technological integration self-efficacy, and various elements. However, their overall technological knowledge level is relatively low, highlighting the urgent need for improvement^[22]. Liang Weijun's research^[23] on the technological integration ability of Chinese university teachers in foreign language teaching suggests conducting needs analysis first and then providing useful and professional workshops by the school, indicating that targeted training can improve teachers' technological knowledge. However, if learning can be more convenient and rewarding in practice, it would be even better. Regarding TPACK teaching, Matthew J. Koehler and Punya Mishra^[24] suggest that it is a framework for "integrating teacher knowledge of technology," consisting of the complex interaction of three knowledge elements: content knowledge, pedagogy knowledge, and technology knowledge^[25], as shown in Figure 2.

The implementation of this new teaching model adopts a form of interdisciplinary collaborative teaching, where Chinese language teachers and educational technology teachers work together

throughout the process. Chinese language teachers handle subject matter, while educational technology teachers provide technical support. Both parties collaborate on teaching methods, embodying the need for joint efforts of pedagogy, subject matter, and educational technology researchers in TPACK development^[26].

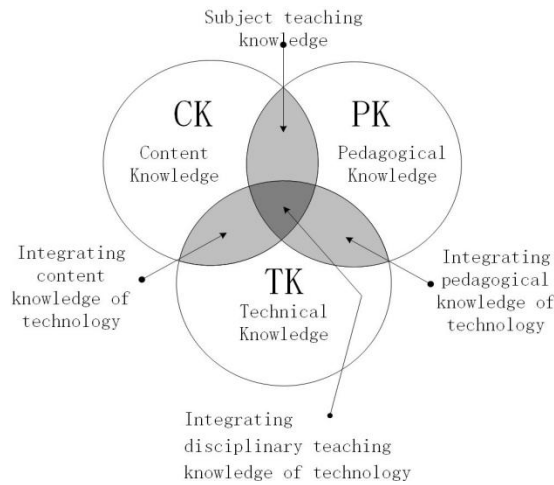


Figure 2: The TPACK framework and its knowledge elements

Under such interdisciplinary collaboration, the innovative teaching model integrated with technology has completed teaching resources for five textbook chapters, including ten teaching videos, ten in-class quizzes, and ten online discussions. Assistant monitoring of platform data, along with pre-class reminders, ensures that each student watches the pre-class vocabulary teaching video, guaranteeing the quality of classroom activities. Moreover, the organization and use of class WeChat groups lay the foundation for subsequent data analysis.

4. Results and Discussion

4.1. Data Analysis

Data analysis serves to optimize teaching, reflecting on the process, and is a crucial part of teaching implementation. The Chinese as a Foreign Language class based on the flipped classroom blended learning collected students' online and offline scores, quantified classroom performance, and online activity levels, comprehensively analyzing all data to provide more feedback and suggestions for experimental teaching.

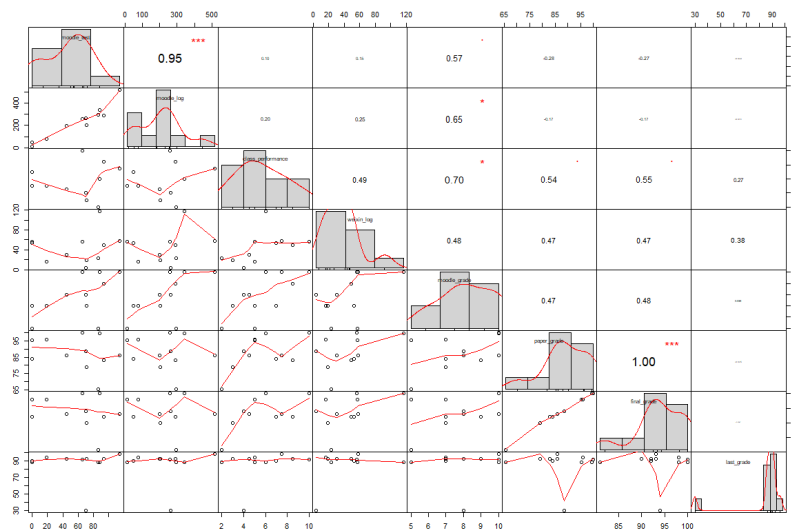


Figure 3: Correlation analysis chart of various activities

The data collection phase mainly involved collecting platform test scores, overall evaluation scores,

and platform activity levels for each person on the Moodle platform, summarizing student speech counts recorded by teaching assistants in class, assessing group chat logs in WeChat, and obtaining end-of-term total evaluation scores and exam scores from the previous semester. With 11 effective participants, traditional teaching was implemented in the previous semester before this experimental teaching. By comparing before and after implementation and evaluating the effects of various added activities on teaching, changes in factors during teaching practice that affect final grades and student self-evaluation were discovered.

Firstly, using R language tools, the correlation comparison analysis graph of various activity scores in Figure 3 was provided, showing variable names diagonally from top to bottom: moodle test (Moodle platform test scores), moodle log (Moodle platform activity), class performance (classroom performance), weixin log (WeChat group activity), moodle grade (Moodle platform total evaluation score), paper grade (final exam score), final grade (final evaluation score), and last grade (last semester's total evaluation score).

The lower-left area diagonally displays scatter plots of linear correlations, with each of the eight sets of data on the diagonal having seven corresponding linear plots with the other seven sets of data, totaling 56 scatter plots (excluding duplicates), which are represented by 28 scatter plots in the lower-left area. The curves on the graph represent fitting curves.

The numbers in the upper-right area of the diagonal indicate the correlation values of the corresponding two sets of data, with higher values indicating greater correlation, and asterisks indicating the significance level. It can be seen from the graph that there is no significant correlation between last semester's total evaluation score and the final evaluation score after implementing the new teaching model, indicating that the changes brought about by the new teaching model are indeed revolutionary. The most influential factors on the total evaluation score, besides the final exam score (1.00), are class performance (0.55), Moodle platform total evaluation score (0.48), and WeChat group activity level (0.47). Moreover, there is a high correlation (0.70) between class performance and the Moodle platform's total evaluation score, suggesting that students who perform well in class are also more willing to study on the Moodle platform to improve their classroom performance.

Secondly, besides the correlation between online and offline activity performance and scores, attention should be paid to changes in the overall class situation after implementing the new teaching model. According to the distribution graphs of grades before and after implementation in Figure 4, it was found that the overall class's grades improved, and the distribution of grades in the last semester (light-colored area) was concentrated and polarized. After implementing the new teaching model, the grades (dark-colored area) not only increased overall but also significantly improved the problem of polarization. Analysis revealed that students who were previously at the lower end of the spectrum benefited from the increase in course resources and had more opportunities to improve themselves. They were more confident in class, more active in learning, and willing to spend more time studying after class, resulting in corresponding improvements in their grades. Meanwhile, students who originally performed well also saw steady improvements in their grades due to increased resources, harmonious classroom activities, and good teacher-student relationships.

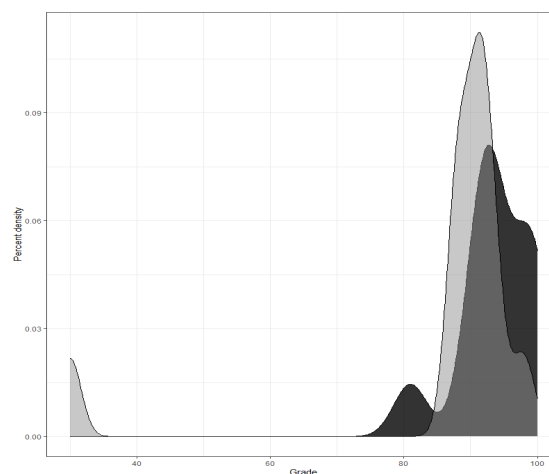


Figure 4: Distribution of scores in the two semesters before and after the implementation

4.2. Analysis and discovery

Combining all the data analysis, it is found that the rich teaching resources brought by the blended learning based on the flipped classroom not only provide conditions for students with lower grades to improve through diligence but also offer more opportunities for students with originally excellent grades to perform better in class, achieving more comprehensive teaching support for learners through technological assistance. However, as implementers of the flipped classroom have discovered, the benefits of flipping the classroom do not solely originate from the design itself but from other components^[27]. Educators who adopt new teaching models have also realized that the key to success lies in teachers' firm belief in educational reform^{[28][29]}. This is an innovation of blended learning driven by the flipped classroom, an exploration of a new type of Chinese language teaching model based on the flipped classroom applied with technological support.

5. Conclusion and Recommendation

The novel blended learning based on the flipped classroom combines the emphasis on students and classroom focus from the flipped classroom concept with the comprehensive, human-centered teaching support service from the blended learning concept^[30], bringing about an innovative mode of Chinese language teaching with technological support. Through means like interdisciplinary cooperation, the integration of teaching content, teaching methods, and technological support has been achieved, fully demonstrating the TPACK concept^[31]. Taking an appropriate perspective to consider the flipped classroom teaching model and implementing blended learning based on the flipped classroom represents an innovation in teaching methods. In the process of this teaching innovation, not only were the original teaching concepts retained, but also a completely new blended learning model based on the flipped classroom was practiced, incorporating teachers' considerations of tradition, innovation, and hybridization. Such teaching practices can continuously promote the development of subject teaching in the context of educational informatization.

The Irish poet William Butler Yeats once said, "Education is not the filling of a pail, but the lighting of a fire," igniting the spirituality and desire in life, igniting the motivation for self-development, and igniting the internal strength of students. Paying attention to students' own needs for learning is an indispensable part of exploring teaching models, especially in the context of educational informatization. How to use technology to achieve integration and innovation is a question that educators will need to consider continuously in the future.

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