The impact of blended-ESP instructional model on fostering English proficiency among students majoring in traditional Chinese medicine

Ruirui Yu [a,1,*], Wilawan Champakaew [b,2]

[a, b] School of Liberal Arts, Mae Fah Luang University, 333 Moo 1 Thasud, Muang, Chiang Rai, 57100, Thailand

[1] 454293766@qq.com *; [2] wilawan.cha@mfu.ac.th

* corresponding author

ARTICLE INFO

ABSTRACT

English proficiency is essential for Traditional Chinese Medicine (TCM) majors to maintain strong connections with the international academic community and promote global academic interaction. However, the English instruction effect was not optimal due to large class sizes, limited class time and learning resources, less interaction, or outdated teaching and evaluation methods (Wang, 2016; Ren, 2017; Chen & Liang, 2020; Liu, 2022). This study aimed to investigate the impact of the blended-ESP instructional model (BEIM) on fostering students' English proficiency as well as explore their attitudes and perspectives on the implementation of BEIM. The participants were 73 second-year TCM majors enrolled in the TCM English course at a TCM university in China. The instruments were pre- and post-tests, a questionnaire, and an interview. The data was analyzed using mean, standard deviation, paired t-test, segmented analysis, and thematic analysis. The results demonstrated the effectiveness of BEIM on fostering students' English proficiency for the significant differences between the scores before and after implementing BEIM at 0.000 (P = 0.000). The results of the questionnaire and interview also revealed students' positive attitudes and perspectives on BEIM. Students' self-disciplinary, English proficiency, and national culture awareness and confidence should be highlighted when conducting blended-ESP instruction.

1. Introduction

Traditional Chinese Medicine (TCM), as an original medical science of the Chinese nation, is a summary of the health and wellness concepts and medical practice of the Chinese nation for thousands of years (Chan, 2016; Liu et al., 2021). It is gradually known for its efficacy in disease treatment, health maintenance, and its concept of health prevention as it enters the global stage. Traditional Chinese medical culture also has been a prominent element of Chinese culture and its national soft power (Zhang & Zhang, 2018; Kadetz & Stanley-Baker, 2021). English proficiency plays a crucial role in facilitating worldwide academic interaction (Lin & Lei, 2021; Soruç et al., 2021), and it is equally necessary for students majoring in TCM to establish and maintain strong connections with the international academic community. Many research achievements in the field of TCM also call for publishing in English-language international publications or academic exchange and collaboration

with international scholars. As a result, attaining a certain level of English proficiency is crucial for TCM students and practitioners so that they are able to read and understand English literature, research reports, and translate professional TCM knowledge into English for sharing and dissemination with international peers. Furthermore, as research on Chinese medicine occupies a prominent global position, international academic exchanges and cooperation play a crucial role in enhancing the international influence and advancement of traditional Chinese medicine. Proficiency in English is quite essential for TCM students and practitioners to actively engage in academic exchanges with overseas peers, fully participate in international conferences, and effectively collaborate on research projects. In short, TCM students and practitioners need to have adequate English proficiency to meet their professional needs.

Colleges and universities have long recognized the importance of foreign language capacity, particularly English language proficiency, in order to cultivate globally competitive professionals (Cai, 2004; Shen, 2010; Shen, 2015; Shen, 2019). English proficiency is necessary for medical students to consult the latest medical literature, publish international papers, attend international medical conferences, and exchange ideas with international peers (Zhang et al., 2020). Medical students lacking the capacity to comprehend and acquire knowledge from English literature and academic publications could be unable to track international progress and update their knowledge at any time. The majority of medical students would pursue clinical or scientific research work after graduation, which suggests that apart from their demanding job, they also need to consistently stay updated with the latest developments in the medical domain both domestically and internationally to enhance their professional expertise.

Research on TCM English is also important for fostering the internationalization of TCM as well as inheriting and promoting its culture. In recent years, research on TCM English has achieved fruitful results, including the creation of new words, standardization of terminology, and text interpretation; promoting the standardized development of TCM internationally; providing better technical support for the global dissemination of TCM; emphasizing the transmission of the unique value and concept of TCM; fostering the exchange of Chinese and western medicine; and promoting the diversity of global medical culture (Pan et al., 2021). TCM English learning facilitates students' English proficiency in some TCM fundamental concepts, including but not limited to Yin-yang theory, five elements theory, meridian theory, and TCM therapeutic principles.

However, the conventional TCM English instruction paradigm consists of teachers, textbooks, simple multimedia, and students. The teacher's explanations in the class, together with the students' attentive listening and memorization, establish the basis of the classroom setting. Teachers pass knowledge on to students by utilizing various instructional tools such as chalk, writing on blackboards, PowerPoint presentations, and a variety of simple multimedia resources. Mostly, students passively receive and internalize the knowledge passed on by their lecturers; they lack interest or motivation in learning (Wu, 2015; Liu, 2022). Since the teaching content is based on the university's compulsory unified textbooks, TCM vocabulary explanations, language points, and content analysis are the main components of conventional teaching contents. The final exam incorporates content from the textbook and closely aligns with the lessons learned in class. There is limited time for teachers to expand on further language points or organize group discussions in the classroom due to the necessity of completing instructional tasks and test preparation. The absence of substantive classroom discussions impedes students' capacity to develop their problem-solving and creative thinking abilities. The study findings of Wang (2016), Ren (2017), and Chen & Liang (2020) support this claim. Furthermore, some teachers, influenced by their years of teaching experience, continue to use the outdated teaching concepts and approaches. The implementation of the internet to assist teaching seems superficial. Finally, conventional TCM course evaluations mostly concentrate on exam scores and classroom performance, which means that online instruction receives little attention and "smart classroom" equipment becomes a decoration rather than a useful instruction tool. This teaching mode creates a dull classroom environment, has low teaching effectiveness, and maintains less active interaction between teachers and students. As ESP in China enters its third stage of development, characterized by deep integration with modern educational technology (Hu, 2019), TCM English instruction using basic multimedia tools is no longer sufficient to meet the diverse and mobile characteristics of today's young students on digital campuses. As the number of "smart classrooms" increases on campuses, instructors need to update their teaching methods and effectively utilize information technology to

implement blended instruction models. They should also encourage students to utilize their mobile phones to enhance their learning (Liu, 2022).

Previous studies on TCM English mostly concentrated on the curriculum design of TCM English (Ren, 2017; Zhang et al., 2020), the compilation of international TCM English textbooks (Li & Zhang, 2013), the international dissemination of TCM culture (Hou & Lyv, 2021), the development of TCM cultural soft power (Zhang & Zhang, 2018; Kadetz & Stanley-Baker, 2021), the construction of TCM translating theory systems (Si, 2019), the training of TCM translators or interpreters (Chan, 2016), and the cultivation of TCM English teacher teams (Wu, 2015). However, there was relatively limited research on the TCM English instructional models, particularly regarding the correlation between the blended TCM English instructional model and the enhancement of students' English proficiency. To cultivate more competitive international professionals in TCM and foster international exchanges in its practice and culture, further research is required in the domain of blended TCM English instructional models to improve students' English proficiency in the TCM field. Therefore, the objective of this study was to examine the impact of a blended-ESP instructional model on fostering English proficiency among students majoring in TCM as well as explore their attitudes and perspectives on the implementation of BEIM. This study consisted of two research questions.

1. Can the blended-ESP instructional model (BEIM) foster university students' English language proficiency?

2. What are students' attitudes and perspectives on the implementation of the blended-ESP instructional model (BEIM)?

2. Method

The current study aimed to examine the impact of BEIM on fostering English proficiency among students majoring in TCM as well as explore their attitudes and perspectives on the implementation of BEIM. The study was carried out from February 2024 to May 2024 after being approved by the Mae Fah Luang University Ethics Committee on Human Research (No. EC24017-10). This study employed a mixed-methods experimental design, utilizing a pre-test, a post-test, and an attitude questionnaire for quantitative data collection, alongside a semi-structured interview to obtain qualitative data.

2.1. Participants

Purposive sampling was utilized to recruit the participants. The study population was second-year undergraduate students majoring in TCM at Guizhou University of Traditional Chinese Medicine, China. The participants were 73 second-year undergraduate TCM majors who enrolled in the "Traditional Chinese Medicine English" course in the second semester of the academic year 2023. All 73 students were selected as participants because they had completed the "College English 1" and "College English 2" courses during their first year's study, while they had never enrolled in the TCM English courses. All of them exhibited the same levels of English proficiency in the field of TCM, and voluntarily participated in the study.

2.2. Research Framework

The blended-ESP instructional model (BEIM) adopted in this study was based on three previous instructional models: the production-oriented approach (POA) (Wen, 2015), ESP teaching mode construction based on the POA (Zhang, 2019), and the "four-dimension" online teaching of English for TCM in the COVID-19 pandemic (Chen & Liang, 2020). The BEIM consisted of eight main components: instruction concept, instruction hypothesis, instruction technology, instruction procedure, face-to-face instruction mode, online learning mode, self-regulated learning mode, and multi-dimensional evaluation. It included three instructional steps: (1) pre-instruction, (2) while-instruction, and (3) post-instruction.
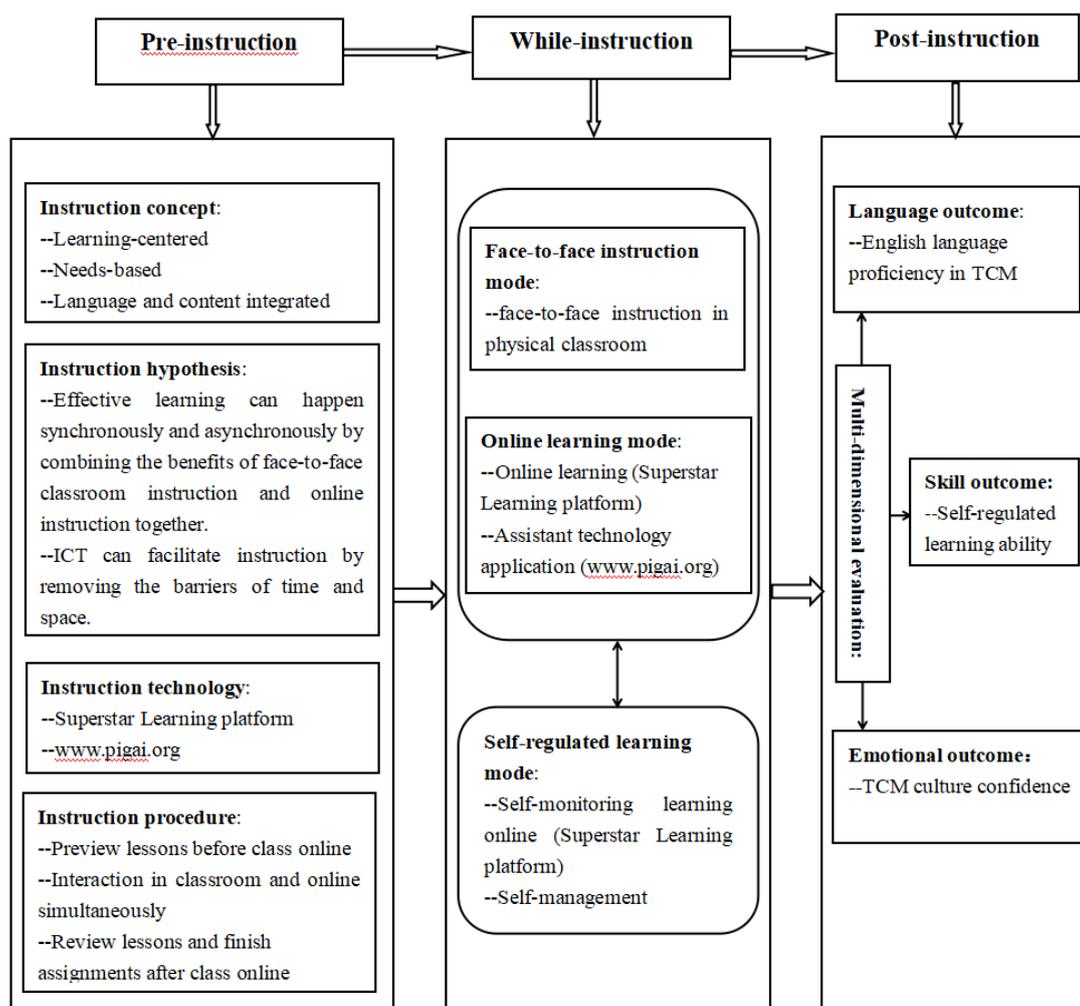
Fig. 1. The blended-ESP instructional model (BEIM) in the study

1)   Pre-instruction

In terms of the instruction concept, BEIM adopted the learning-centered, needs-based, and language and content integrated concepts. The "learning-centered" concept, derived from the production-oriented approach (POA) (Wen, 2015), advocated that all classroom teaching activities should serve the occurrence of effective learning. The "needs-based" and "language and content integrated" concepts were based on the prominent characteristics of ESP courses. The "needs-based" concept emphasized that the TCM English course should be based on students' professional learning needs and future employment needs. The difference between the TCM English course and the general English course was that the former needed to consider both the English language proficiency and TCM content expression at the same time, which corresponded to the concept of "language and content integrated".

There were two instruction hypotheses in BEIM. The first one was that effective learning can happen synchronously and asynchronously by combining the benefits of physical classroom instruction and online instruction (Hu & Yang, 2018); the second one was that information and communications technology (ICT) can facilitate instruction by removing the barriers of space and time. The TCM English course was delivered using the Superstar Learning platform, which could integrate mobile teaching, mobile learning, mobile reading, and mobile social networking. The efficacy of the Superstar Learning platform has been substantiated by several researchers in promoting its teaching effects, especially in promoting comprehensive understanding of medical English and TCM English (Chen & Liang, 2020; Su et al., 2021). The Juku Correction website (www.pigai.org) was selected as the main technology application in the pre- and post-tests. It was an intelligent online grading platform for correcting English writings that built an English writing database and was launched in 2010 in China. The grading website, a cloud-based online service, has demonstrated

accuracy and effectiveness in automatically grading English essays. The TCM English course, by implementing BEIM, mainly consisted of three instructional procedures. First of all, students were required to preview lessons before class online. Secondly, students were encouraged to actively engage in the interaction in the classroom and online simultaneously. Thirdly, students were encouraged to review lessons and finish assignments after class online.

2) While-instruction

The instruction modes included face-to-face instruction mode, online learning mode, and self-regulated learning mode. Face-to-face classroom instruction constituted 60%, online learning comprised 30%, and self-regulated learning represented 10%. The face-to-face instruction mode pertained to face-to-face instruction in the physical classroom setting. The online learning mode primarily utilized the Superstar Learning system as the platform and the Juku Correction website as the supplementary technological application. The self-regulated learning mode encompassed students' online self-monitoring and self-management of their learning processes.

3) Post-instruction

The multi-dimensional evaluation, consisting of language outcome, skill outcome, and emotional outcome, was used to assess the effectiveness of BEIM. The language outcome referred to the students' English language proficiency in TCM, the skill outcome pertained to the students' self-regulated learning ability, and the emotional outcome was to investigate the students' TCM cultural confidence.

2.3. Research Instruments

The instruments employed in this study comprised a writing pre-test, a writing post-test, an attitude questionnaire, and a semi-structured interview. The two tests were employed to evaluate the students' writing proficiency in describing or introducing traditional Chinese medicine in English. The pre-test and post-test consisted of 4 writing tasks, each worth 25 points, resulting in a total of 100 points. The students' writing tasks should consist of a minimum of 120 words and a maximum of 180 words, adhering to the writing rubrics of the College English Test Band 4 (CET 4) in China.

The attitude questionnaire utilized the five-point Likert scale, with 5 representing "strongly agree", 4 representing "agree", 3 representing "neither agree nor disagree", 2 representing "disagree" and 1 representing "strongly disagree" to assess students' attitudes towards implementing BEIM. The questionnaire consisted of two sections: the first section gathered the participants' personal information, while the second section focused on the participants' perspectives regarding the implementation of BEIM. The semi-structured interview aimed to gather students' in-depth perspectives on BEIM. The interview consisted of eight questions and was conducted face-to-face.

2.4. Data Collection Procedures

The BEIM was implemented into the TCM English course for a duration of ten weeks. Lessons delivered in the face-to-face classroom setting made up 60% (2 hours), while online learning comprised 30% (1 hour), and learning through self-regulation made up 10% (20 minutes). On the first day of the course, the instructor introduced the course, the BEIM, learning content, instruction process, proportion of each mode, course requirements, and evaluation system to the students. After the introduction, the students completed the writing pre-test. The students' pre-test scores were initially assessed automatically by the Juku Correction website. Subsequently, three English teachers meticulously reviewed the scores based on the grading rubrics that encompassed criteria covering content, vocabulary, grammar, organization, and mechanics.

For the face-to-face classroom instruction, the instructor used the "Traditional Chinese Medicine English" textbook edited by Zhaoguo Li and Qingrong Zhang (Li & Zhang, 2013), published by Shanghai Science and Technology Press. There were a total of eight learning lessons, and one unit was covered for one week. The eight units were:

Lesson 1 Traditional Chinese Medicine: History and Development

Lesson 2 The Basic Characteristics of TCM Theoretical System

Lesson 3 The Theory of Yin and Yang

Lesson 4 The Theory of Five Elements

Lesson 5 The Five Zang-Organs and Six Fu-Organs

Lesson 6 Qi, Blood, and Body Fluid

Lesson 7 The Four Diagnostic Methods

Lesson 8 Acupuncture and Moxibustion

In terms of online learning, the course "An Introduction to Chinese Medicine" from Guangzhou University of Chinese Medicine was chosen as supplemental online learning resources. This course focused on using the fundamental theories of TCM to teach the English expressions related to its core concepts, knowledge, and cultural ideas. There was a total of eight learning units, each of which covered knowledge about TCM and various aspects of TCM culture. The students accessed the learning link on the Superstar Learning platform issued by the instructor, and they accomplished assignments after learning by utilizing their mobile phones or laptops. As for self-regulated learning, students were required to complete assignments such as preview and review lessons, finish learning tasks, activities, and discussions, and propose questions after class on the Superstar Learning platform. The platform kept records of students' learning, and the instructor also checked their learning progress frequently.

In the last class of the ten weeks' instruction, students were required to participate in the writing post-test to assess their English proficiency after implementing BEIM. The students' post-test scores were evaluated and verified as the same as the pre-test. Subsequently, the questionnaire was conducted on the Questionnaire Star platform (www.wjx.cn) to examine the students' perspectives on the implementation of BEIM. Finally, the semi-structured interview was carried out to collect students' in-depth views. The interview was conducted in a person-to-person manner.

2.5. Data Analysis

The descriptive statistics were utilized to analyze the collected quantitative data, and the thematic analysis approach was employed to analyze the gathered qualitative data in this study. The students' pre- and post-tests scores were analyzed by using mean, standard deviation, paired t-test, and segmented analysis. If the mean value of the post-test was higher than that of the pretest, it signified that BEIM had the potential to enhance students' English proficiency. When the mean value of the post-test was roughly equal to that of the pre-test, no significant improvement was observed. A lower mean post-test value than the pre-test suggested that BEIM did not improve students' English proficiency. The data obtained from the questionnaire was analyzed using the statistical measures of mean and standard deviation. The data collected from the participants' interview responses was analyzed by thematic analysis. Five themes emerged from the interview regarding students' perspectives on the preference model, strengths and weaknesses of the BEIM, perceived improvement, application of technology, and TCM cultural confidence, based on the percentage derived from the frequencies of the tokens in the interviewees' responses.

3. Findings and Discussion

3.1. The Effectiveness of BEIM on Fostering Students' English Proficiency

Table 1. Comparison between students' pre-test and post-test scores

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	*Std. Deviation*	*Std. Error Mean*	*95% Confidence Interval of the Difference*				
					Lower	*Upper*			
Pair 1	pre-score - post-score	-23.7808	12.8087	1.4991	-26.7693	-20.7923	-15.863	72	.000

Note: p< 0.05

According to the data in Table 1, the paired sample t-test indicated that the P-value for the significance of the variable pre-score paired post-score was 0.000 (p = 0.000). Therefore, there was a significant difference between the score before the test and the score after the test, clearly demonstrating the important influence of BEIM on improving students' English proficiency. Based on the writing tasks on the Juku Correction website, it was found that the majority of students struggled to use the correct vocabulary to express TCM knowledge, and only a small number of students were

able to score above 80 points in the pre-test, primarily because they relied on advanced common vocabulary, complex sentence structures, and accurate English grammar instead of using accurate and appropriate TCM terms. However, the students' writings in the post-test demonstrated that the majority of them were able to effectively utilize TCM terminology in their writing tasks.

Table 2. Segmented analysis for students' pre-test and post-test scores

		Pre-test		Post-test	
		Frequency (Number of students)	*Cumulative Percent*	*Frequency (Number of students)*	*Cumulative Percent*
Valid	0-60 (unqualified)	34	46.6		
	60-80 (average)	37	50.7	12	16.4
	80-100 (excellent)	2	2.7	61	83.6
	Total	73			

Note: N=73

The segmented analysis was utilized to classify students' scores into three distinct categories: unqualified for scores between 0 and 60, average for scores between 60 and 80, and excellent for scores between 80 and 100. According to Table 2, the pre-test results showed that 46.6% of the students received scores that were either unqualified or below average. Only 2.7% of the students achieved scores that were classified as excellent. Nevertheless, in the post-test, a significant proportion of students, specifically 83.6%, achieved a level of excellence, while no students fell into the unqualified or below average category.

The segmented analysis revealed that the implementation of BEIM had positive impacts on enhancing students' English proficiency. This conclusion was supported by the fact that most students' scores in the pre-test were either unqualified or below average, whereas the majority of students achieved excellent scores after the implementation of BEIM. This finding aligned with previous research indicating that ESP instructors could employ appropriate online platforms to mitigate the challenges posed by substantial workloads in both language and content instruction, thereby ensuring students' learning outcomes through the utilization of these platforms (Alvarez, 2020; Zou et al., 2021; Yi & Bin Baki, 2022).

3.2. Students' Attitudes towards BEIM

The attitude questionnaire included two sections. The first section examined students' final examination scores for the TCM English course. The second section consisted of 10 questions on students' perceptions of BEIM implemented in the course.
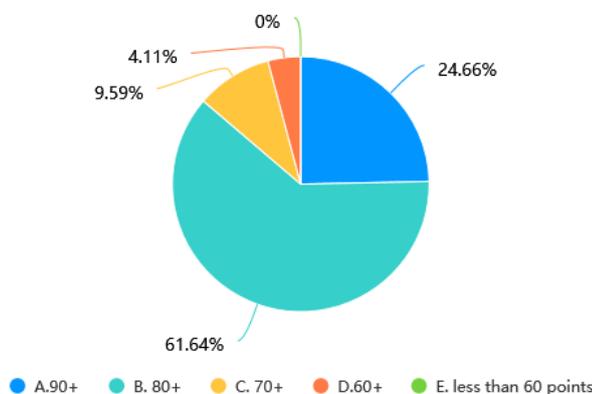

Fig. 2. Results of students' final exam for the TCM English course

According to the data obtained from the first section of the questionnaire (Fig. 2), most of the students achieved a score of 80+ points (61.64%), followed by a score of 90+ points (24.66%) in their final exams. Only a small proportion of the students (9.59%) obtained 70+ points, while 4.11% selected 60+ points for their final exam scores. No one chose to obtain a score below 60+ points. In conclusion, the majority of students in this course achieved satisfactory final exam grades, with a total score concentrated between 80 and 90 points, which was the largest proportion.

Table 3. Results of students' attitude questionnaire (second section)

Questions	Mean	Std. Deviation	Interpretation
① You are satisfied with the blended-ESP instructional model in terms of improving your TCM English learning.	4.21	.706	positive
② The blended-ESP instructional model can foster your English language proficiency.	3.93	.733	positive
③ The blended-ESP instructional model can enhance your motivation to learn TCM English.	4.10	.767	positive
④ The blended-ESP instructional model can increase communication between the teacher and students both online and in face-to-face classroom.	4.01	.736	positive
⑤ The lesson plans, relevant contents, learning activities and assignments are appropriate.	4.11	.737	positive
⑥ The usage of technology by the instructor is acceptable and efficient.	4.10	.748	positive
⑦ The proportion between face-to-face classroom instruction and online learning designed by the instructor is appropriate.	4.00	.764	positive
⑧ Blended learning provides you more opportunities to review TCM English learning materials.	4.19	.720	positive
⑨ Your self-regulated learning can be stimulated through practicing the blended-ESP instructional model for TCM English course.	4.03	.687	positive
⑩ Your cultural confidence towards TCM can be boosted through practicing the blended-ESP instructional model for TCM English course.	4.16	.707	positive

The five-point Likert scale (5 = "strongly agree", 4 = "agree", 3 = "neither agree nor disagree", 2 = "disagree", and 1 = "strongly disagree") was employed for the 10 questions to measure students' perceptions towards the BEIM implemented in the course. The Likert scale mean score was interpreted as follows: 1.0-2.4 = negative attitude, 2.5-3.4 = neutral attitude, and 3.5-5.0 = positive attitude. Table 3 indicated that the 73 students showed positive perceptions towards the 10 questions, with mean values of 4.21, 3.93, 4.10, 4.01, 4.11, 4.10, 4.00, 4.19, 4.03, and 4.16, respectively. Among the 10 questions, the mean value for question 1 was 4.21, ranking the highest, revealing that students hold positive and satisfied attitudes toward implementing BEIM to improve their TCM English learning. This finding was consistent with previous studies, which suggested that blended instructional models, which combined the strengths of both offline and online instruction, could benefit students more in their English learning than traditional classroom teaching or solely online instruction. (Yang et al., 2017; Cai, 2019; Asaad Hamza Sheerah, 2020; Jiang et al., 2021; Wu, 2023).

3.3. Students' Perspectives on the Implementation of BEIM

Fifteen students were invited to participate in the semi-structured interview based on their voluntary participation. The eight interview questions were designed to explore the students' in-depth perspectives on the BEIM implemented for the TCM English course. The overall findings from the semi-structured interviews indicated that students held positive views regarding the implementation of BEIM for the TCM English course. The findings were categorized into 5 themes that arose from the interviews on the students' perspectives on the preference model, strengths and weaknesses of BEIM, perceived improvement, application of technology, and TCM cultural confidence. Table 4 presented a comprehensive overview of the students' overall perspectives regarding the implementation of BEIM.

Table 4. Students' overall perspectives on the implementation of BEIM

No.	Theme	Students' perspectives
①	Preference model	The blended-ESP instructional model
②	Strengths and weaknesses of BEIM	Strengths: rich online resources; strong flexibility; personalized learning; interesting learning experiences; convenient online preview and review
		Weaknesses: Students with poor self-discipline might not complete learning assignments on time.
③	Perceived improvement	TCM English terms and expressions; TCM English proficiency; TCM cultural confidence; self-regulated learning ability
④	Application of technology	Students embraced the application of the Superstar Learning platform and Juku correction website in their TCM English learning.
⑤	TCM cultural confidence	Students' cultural confidence towards TCM was greatly enhanced.

1) Students' perspectives on the preference model

The fifteen participants unanimously endorsed BEIM, expressing a strong preference for it. They stated that this model significantly enhanced their TCM English learning by integrating the advantages of both offline and online teaching and learning. Some of the students' responses were listed below to shed light on their statements.

"I prefer blended learning. Firstly, it can make learning more efficient and save time. Some assignments and tasks can be completed after class without taking up classroom time, allowing time to be fully used. Secondly, a single learning mode can easily lead me into a dull and routine learning state." (Student ID:42)

"I think the blended instruction is very good. The classic works of TCM and the English TCM materials available online have expanded my knowledge, enhanced my vocabulary, and aligned my studies more closely with my major. The second is the combination of online and offline modes, which not only improves face-to-face communication, but also makes it convenient to collect and sort out extensive information on the Internet." (Student ID: 51)

"I prefer the blended model. The combination of online and offline can complement each other. If I cannot keep up with the teacher, I can still take the time to review the knowledge learned online. And online learning can be done anytime, anywhere." (Student ID: 63)

Based on the students' responses, they expressed a preference for BEIM over the solely physical classroom model or online model. This finding was in line with the findings of the attitude questionnaire, indicating that students held positive attitudes towards BEIM. The benefits of a blended model were stated to encompass diversity in learning styles, efficient and interesting learning experiences, saving classroom time, optimal utilization of online learning resources, and convenient online preview and review (Wang, 2023). Blended instruction offered a significant advancement in terms of increasing the availability of teaching and learning time and space, when compared to traditional face-to-face classroom teaching (Cai, 2019; Yang et al., 2017).

2) Students' perspectives on the strengths and weaknesses of BEIM

In terms of the strengths of BEIM, many students reported that the blended instruction helped them utilize online resources to enhance their learning. It also offered outstanding flexibility, allowing them to arrange their learning content based on their own learning pace and needs. The flexibility in space and time and diversity in learning styles helped develop their self-directed learning ability, which was significant for lifelong learning. This research finding was in line with Chen and San's study, which indicated that students could develop their self-directed learning through a highly contemporary, personalized, and sustainable self-directed learning habit by utilizing the benefits of online learning platforms (Chen & Shan, 2021).

"The advantage is that BEIM can better meet our learning needs. It can help us not only learn new knowledge but also save more time." (Student ID:10)

"I think the strengths of BEIM are flexibility and diversity, which can make full use of online resources to enrich the learning content." (Student ID: 38)

"The BEIM has increased the happy learning atmosphere in the classroom, and happy learning can better improve our learning effectiveness, better understand the learning content, and improve learning efficiency." (Student ID: 51)

"The BEIM allows me to engage in self-directed learning by watching online learning videos and completing preview tasks before class, while classroom time is used for discussion, deepening understanding, and applying knowledge. Blended learning has strong flexibility, and we can arrange learning according to our own situation." (Student ID: 60)

However, students also reported the weaknesses of BEIM from their own perspectives. The most prominent feedback from the students was that they occasionally struggled with self-discipline while conducting online learning or self-regulated learning, resulting in incomplete or superficial completion of learning assignments, and limited English improvement. For example, student ID 10 stated that *"For me, the drawbacks outweigh the benefits of using online learning activities to improve my English proficiency. Online learning means I have to resist the temptation of mobile entertainment information, but my self-control ability is relatively limited. So, the online learning activities are not very attractive for me, and my English promotion is very limited."*

They also reported that sometimes the TCM vocabulary was challenging, they could not hold their concentration. Occasionally, the instructor could not timely monitor whether they were indeed studying seriously online.

"The weaknesses are that it requires high self-discipline. Sometimes I am not so self-disciplined, then I am unable to finish online tasks on time." (Student ID: 38)

"The teacher cannot timely supervise whether we are really studying seriously online. Some of the TCM vocabulary is so difficult that I sometimes lose concentration." (Student ID: 51)

This study found that students' online learning or self-regulated learning required them to be highly self-disciplined; otherwise, they might be unable to achieve the instructor's expected goals. According to students' responses, if they had poor self-discipline or the instructor did not make online learning tasks as compulsory assignments, they might feel that doing online assignments was a waste of time and were not motivated to complete them. Then, the instructor's intended teaching and learning objectives might not be met. This finding was confirmed by some previous studies, which claimed that students' ability to monitor, manage, and regulate their own learning was highlighted by educational psychology (Cleary & Platten, 2013; Shekhar & Devi, 2012). Considering this, instructors who conduct blended instruction should care about students' performance online, set regulations for students to be self-disciplined, and require them to finish tasks on time, no delays or plagiarism.

3) Students' perspectives on the perceived improvements

Regarding the perceived improvements, students' feedback indicated that they acquired a number of TCM terms and expressions in English, enhanced their English proficiency to articulate TCM knowledge and culture, and developed a deeper comprehension of the philosophical Chinese medical system through their participation in this course.

"I used to understand TCM knowledge in Chinese, but now I can use English to introduce it. This course introduced much TCM knowledge and culture; vocabulary in the medical field has also been added. After learning TCM English, I can better tell the stories of TCM to foreigners." (Student ID: 63)

"This course helped me master many TCM terms and expressions in English. It may help me to expand my international perspective as a healthcare professional in the future and enhance my cross-cultural communication skills." (Student ID: 58)

Some of the students mentioned that TCM English learning would be very helpful for them to improve their scientific research ability and pursue a postgraduate study. This discovery was consistent with Zhang's research, which asserted that learning English for specific purposes was essential for the development of students' scientific research abilities, and academic English was a core component of their postgraduate studies (Zhang et al., 2020).

"By studying this course, I improved my English proficiency to express TCM knowledge, gained a deeper understanding of the rich philosophical Chinese medical system. I think it will be very helpful for me to develop my scientific research ability and continue a postgraduate education." (Student ID: 60)

Online learning materials provided on the Superstar Learning platform could enhance students' interest in learning TCM English and provide a more flexible and diverse learning experience. Additionally, students could effectively utilize their fragmented time to learn via some online platforms, such as the Superstar Learning platform and the Juku Correction website.

"It can improve my interest in learning English and through online learning resources, making learning more flexible and diverse. And this can also help me better use fragmented time to improve my TCM English proficiency." (Student ID: 38)

Besides, students' self-regulated learning ability has been improved by implementing BEIM. Utilizing contemporary information technology to enable English teaching and learning to progress toward individualized and self-directed learning without being constrained by time or place, has been one of the teaching objectives clearly stated in the "College English Curriculum Teaching Requirements" in China. Facilitating students to acquire knowledge through self-regulated or self-directed learning was essential for fostering their interest and motivation in learning, which was one of the indispensable conditions for fulfilling academic achievements (El-Adl & Alkharusi, 2020).

"The learning materials, activities, or tasks on the Superstar Learning platform improved my self-regulated learning. I can choose the learning materials, pace, and difficulty level to suit my own needs and interests, and my English for TCM improved a lot." (Student ID: 42)

4) Students' perspectives on the application of technology

Based on the students' responses, it could be seen that they embraced the application of the Superstar Learning platform and Juku correction website in their TCM English learning. With the assistance of these educational technology tools, students' learning resources were expanded, personalized learning was guaranteed, students' interest in learning and classroom participation were improved, and the interaction between the instructor and students was enhanced.

"I think the Superstar Learning platform and the Juku Correction website changed the traditional teaching method, expanded our learning resources, improved our learning participation and effectiveness, and strengthened the interaction and flexibility." (Student ID:10)

"We can access richer learning resources from Superstar Learning provided by our teacher. I think technology made our classroom presentations more vivid, increased our enthusiasm for participating in classroom discussions, and enhanced interaction between the teacher and us after class." (Student ID: 3)

"The Superstar Learning platform provided abundant resources; we can learn according to our own pace and also communicate learning problems with our classmates or teachers at any time." (Student ID: 39)

By leveraging the benefits of modern network technology, a variety of online learning systems and platforms offered students increased access to learning resources. Students could break through the limitations of English learning in class time and classroom space; they could choose learning resources that fit their own needs for learning and select learning content depending on their interests, needs, goals, and task requirements. This discovery was in line with Wu's study, which indicated that smart platforms were crucial for improving college students' cognitive engagement in self-directed learning and their learning outcomes (Wu, 2023).

"I can revise my writing according to the comments and suggestions provided by the Juku correction website after class. At the same time, it also helps to cultivate my ability to independently solve problems." (Student ID: 63)

5) Students' perspectives on TCM culture confidence

This study indicated that the study of TCM English had typically increased students' confidence in Chinese medicine culture. According to students' responses, acquiring English proficiency through this course helped them express TCM knowledge and culture in English more accurately and confidently. This was very helpful for their future postgraduate studies, participation in international

medical conferences, or career development as physicians. This finding was consistent with Zhang's research, which believed that learning English in a specific field was not only essential for enhancing students' scientific research capacity but also a key component in their postgraduate education, even career development (Zhang et al., 2020).

> *"Learning this course helps me better express TCM knowledge and concepts in English, allowing me to introduce TCM culture more accurately and confidently. If more people can express TCM culture in English, it will enable foreigners to experience its charm. By taking this course, I can confidently demonstrate the unique value of TCM culture in communication with international peers. It also improves my confidence in TCM culture."* (Student ID: 3)

> *"Studying TCM English enhanced my English interpretation of TCM knowledge; it is helpful in promoting my further study and career development. It also boosted my confidence and pride in TCM culture."* (Student ID: 58)

Since TCM is an ancient medical science that encompasses the health and wellness principles and medical practices developed by the Chinese nation over thousands of years, TCM culture has been a significant element of China's rich traditional culture (Hou & Lyu, 2021). An essential element of cultivating excellent international professionals in the TCM field is to enhance students' confidence in TCM culture.

> *"By studying the TCM English course, I can learn to express basic TCM knowledge in English. Our country now widely advocates and encourages the study and application of TCM. In foreign countries, TCM has received increasing attention too, and my cultural confidence in TCM has naturally developed."* (Student ID: 38)

As a result, English instructors should understand that language education can facilitate the integration of both language and culture. When teaching a foreign language, instructors should help students build their own national cultural awareness and cultivate their confidence in their national culture as well.

4. Conclusion

In conclusion, the findings of this study confirmed some previous studies, indicating that students generally possessed positive attitudes towards the blended-ESP instructional model, which effectively enhanced their English proficiency due to its advantages, including strong flexibility, abundant resources, personalized learning, convenient online review and preview, and effective teacher-student interactions. On modern campuses, English instructors are expected to leverage digital technology to develop innovative instructional models to enhance their pedagogy. Meanwhile, blended instructional models also require students to possess a high level of self-discipline; otherwise, it may result in delays, plagiarism, or any other negative consequences. Furthermore, the results suggested that students' cultural confidence toward TCM was enhanced when they learned TCM English. Therefore, students' self-disciplinary, English proficiency, and national culture awareness and confidence should be highlighted when conducting a blended-ESP instruction.

However, there is still space for further and more research in this field. The primary focus of this study was to examine the impact of BEIM on fostering TCM students' English proficiency by adopting writing pre- and post-tests, with a research duration of 10 weeks. English proficiency comprises not only writing skills but also numerous components such as reading, listening, speaking, and even translation skills. Future studies can explore the impact of this model on students' overall English proficiency from multiple perspectives. In addition, this study mainly utilized the Superstar Learning system as the main online platform for implementing the blended instruction, and the Juku Correction website as the solely intelligent correction system for grading the students' English writing tests. For future study, the mixed use of multiple online platforms (such as Unipus, Rain Classroom, DingTalk, Tencent Meeting, etc.) can be explored. Meanwhile, more specialized intelligent writing correction platforms like iTEST or iWRITE could be used to assess the precision in evaluating students' written works in comparison to the Juku Correction website.

Hu, Z., & Yang, Q. (2018). Exploration and practice of autonomous learning teaching mode for accounting professional courses based on "Rain Classroom". *Universal Journal of Educational Research*, 6(8), 1692-1696. https://doi.org/10.13189/ujer.2018.060809

Jiang, Y., Chen, Y., Lu, J., & Wang, Y. (2021). The effect of the online and offline blended teaching mode on English as a foreign language learners' listening performance in a Chinese context. *Frontiers in Psychology*, 12, 1-16. https://doi.org/10.3389/fpsyg.2021.742742

Kadetz, P., & Stanley-Baker, M. (2021). About face: How the People's Republic of China harnessed health to leverage soft power on the world stage. *Frontiers in Human Dynamics*, 3, 1-12. https://doi.org/10.3389/fhumd.2021.774765

Li, Z., & Zhang, Q. (2013). *Traditional Chinese Medicine English*. Shanghai: Shanghai Science and Technology Press.

Lin, T., & Lei, J. (2021). English-medium instruction and content learning in higher education: Effects of medium of instruction, English proficiency, and academic ability. *SAGE Open*, 11(4), 1-10. https://doi.org/10.1177/21582440211061533

Liu, S., Zhu, J. J., & Li, J. C. (2021). The interpretation of human body in traditional Chinese medicine and its influence on the characteristics of TCM theory. *Anatomical Record*, 304(11), 2559–2565. https://doi.org/10.1002/ar.24643

Liu, Y. (2022). Exploration on college English mixed "Golden Course" teaching mode based on Superstar Learning System. *Journal of Hubei University of Education*, 39 (11), 105-108.

Pan, L., Ning, Q., & Yang, Y. (2021). Research status, hotspots and prospects in the field of TCM translation in China--A visualization study based on co-word analysis. *Chinese Journal of Library and Information Science for Traditional Chinese Medicine*, 45(4), 7-13.

Ren, R. (2017). Inquiry teaching reform for TCM English teaching. *Education of Chinese Medicine*, 36(1), 23-27. https://doi.org/10.3969/j.issn.1003-305X.2017.01.227

Shekhar, C., & Devi, R. (2012). Achievement motivation across gender and different academic majors. *Journal of Educational and Developmental Psychology*, 2, 105–109. https://doi.org/10.5539/jedp.v2n2p105

Shen, Q. (2010). The global orientation of foreign language education policies in Chinese universities. *Modern Education Management*, 1, 32-34.

Shen, Q. (2015). Strategic transformation for the construction of our national foreign language competence under the guidance of the strategy of "One Belt and One Road". *Journal of Yunnan Normal University*, 47(5), 9-13.

Shen, Q. (2019). Forty years of national foreign language capacity construction in China：Retrospect and prospect (1978-2018). *Foreign Languages in China*, 16(4), 43-49.

Si, G. (2019). Analysis of problems and countermeasures of TCM translation in the context of the "the Belt and Road" Initiative. *TCM Research*, 32(6), 42-46.

Soruç, A., Altay, M., Curle, S., & Yuksel, D. (2021). Students' academic language-related challenges in English Medium Instruction: The role of English proficiency and language gain. *System*, 103, 1026-1051. https://doi.org/10.1016/J.SYSTEM.2021.102651

Su, B., Zhang, T., Yan, L., Huang, C., Cheng, X., Cai, C., & Cui, D. (2021). Online medical teaching in China during the COVID-19 pandemic: Tools, modalities, and challenges. *Frontiers in Public Health,* 9, 1-6. https://doi.org/10.3389/fpubh.2021.797694

Wang, N. (2016). The enlightenment of ESP teaching mode on the traditional Chinese medicine English instruction. *Global Traditional Chinese Medicine*, 9(5), 613-615.

Wang, R. (2023). Research on effectiveness of college English blended teaching mode under small private online course based on machine learning. *SN Applied Sciences*, 5(55). https://doi.org/10.1007/s42452-023-05278-y

Wen, Q. (2015). Constructing the theoretical system of "production-oriented approach". *Foreign Language Teaching and Research*, (4), 47-58.

Wu, J. (2015). Analysis of current TCM English teaching in TCM colleges. *Chinese Medicine Modern Distance Education of China*, 13(4), 101-102.

Wu, Z. (2023). An empirical study of blended English teaching based on Smart platform. *China Education Technology*, 12, 121-127.

Yang, F., Wei, X., & Zhang, W. (2017). An exploration of blended English teaching model. *Technology Enhanced Foreign Language Education*, 173, 21-28.

Yi, Y., & Bin Baki, R. (2022). An integrative review on blended ESP teaching in higher education. *International Research Journal of Education and Sciences (IRJES)* , 6(1), 264-274.

Zhang, H., & Zhang, Z. (2018). Study on the promotion path of soft power of traditional Chinese medicine culture in the perspective of cultural power. *Chinese Medicine Modern Distance Education of China*, 16(21), 1-4.

Zhang, H., Jin, S. J., & Du, S. Z. (2020). Developing a curriculum model of English teaching for master's degree nursing education in a Chinese medicine university. *International Journal of Nursing Sciences*, 7(1), 99–104. https://doi.org/10.1016/j.ijnss.2019.12.001

Zhang, J. (2019). Research on teaching mode construction of ESP course for textile engineering based on production-oriented approach. *Theory and Practice in Language Studies*, 9(8), 1055–1064. https://doi.org/10.17507/tpls.0908.26

Zou, C., Li, P., & Jin, L. (2021). Online college English education in Wuhan against the COVID-19 pandemic: Student and teacher readiness, challenges and implications. *PLoS ONE*, 16(10), 1-24. https://doi.org/10.1371/journal.pone.0258137