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An Analysis of the Research Trends in Blended Learning Methods in Teaching College English Reading Courses

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Abstract: Curtis J. Bonk defined blended learning as a combination of face-to-face and computer-assisted online learning instruction since it was gradually formed after the emergence of the Internet [1,2]. Breen pointed out that blended learning is a learning method that combines online and offline learning activities and resources [3]. The blended learning approach is popular in school and e-learning. Moreover, it is one of the important trends in promoting higher education reform in the coming years. Therefore, it has attracted the attention of international researchers [4]. In this paper, 42 articles in Scopus (established by international institutions) and 30 articles in CNKI (found by Chinese mainland institutions) on the query of "college English reading blended learning" in the field of education were analyzed. Furthermore, CiteSpace software was used to analyze the research hotspots and trends with the keyword clusters and citations that occurred in the last two decades (1999 to 2022) to foresee future research prospects.

Keywords: Research trend; Blended learning; College English reading courses; Scopus; CNKI

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1. Research trends in blended learning retrieved from Scopus

1.1. Data retrieval and description

Scopus database, which was jointly built and produced by 21 research institutions and more than 300 scientists worldwide, was used in the literature review of this study. Data were retrieved from the database on September 25, 2022. Based on the topic of this study, 42 articles were retrieved by applying specific settings in the advanced query. The search terms and the refinement process are listed in **Table 1**. The relevant articles were stored as plain text files with the citation information, abstract, and keywords. The files were converted into an executable format for visualization by using CiteSpace. After compiling all relevant data, they were summarized and put together to generate a comprehensive picture from publication records that have been filtered. The overall statistics is presented in **Table 2**. Out of 42 publications, the most-cited article has 120 citations. The publications have 270 total citations and an average of 6.43 citations per article. Although blended learning was studied as early as the 1980s, it was in 2004 that the first article regarding blended learning in college

English reading was published. This detailed statistic reveals a significant discrepancy between the most cited article and the average citation, suggesting that the most cited paper possesses many sources and vital work. The number of articles published each year is given in **Figure 1**. Research on college English reading blended teaching or learning topics started to emerge in 2021. The continuation of this trend in the future can be foreseen.

Table 1. Search queries and refinement procedure in Scopus

Set	Results	Refinement
1	3582	(TITLE-ABS-KEY (blended) AND TITLE-ABS-KEY (college AND English AND reading) OR TITLE-ABS-KEY (online AND offline) OR TITLE-ABS-KEY (hybrid))
2	102	Refined by (TITLE-ABS-KEY (blended) AND TITLE-ABS-KEY (college AND English AND reading) OR TITLE-ABS-KEY (online AND offline) OR TITLE-ABS-KEY (hybrid)) AND (LIMIT-TO (SUBJAREA , "ARTS AND HUMANITIES"))
3	86	Refined by (TITLE-ABS-KEY (blended) AND TITLE-ABS-KEY (college AND English AND reading) OR TITLE-ABS-KEY (online AND offline) OR TITLE-ABS-KEY (hybrid)) AND (LIMIT-TO (SUBJAREA , "ARTS AND HUMANITIES")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re"))
4	42	Refined by removing some articles unrelated to "Education", "College" or "Reading"

Table 2. Bibliographic statistics of 42 recorded published articles extracted from Scopus

Total publications	Total citations	Average citations per article
42	270	6.43

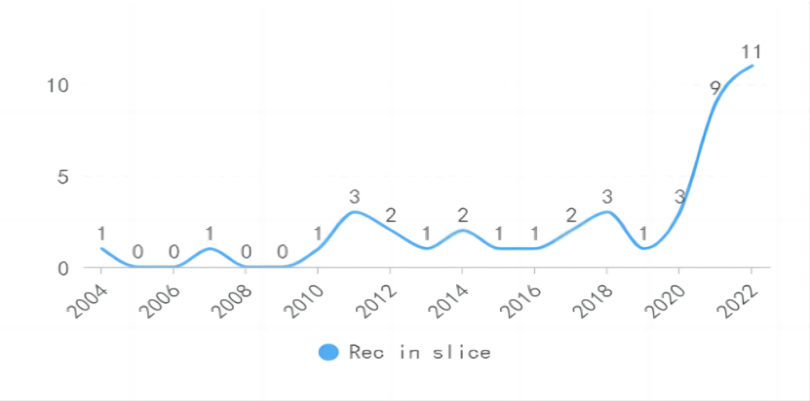

Figure 1. The 42 recorded publications trend from the year 2004 to 2022

1.2. Blended learning based on prior research

Figures 2 and **3** show a precise sequence of the research domain and cluster center, which are "English reading difficulties," "offline blended teaching," "blended teaching mode," and "student." The first cluster center is closely surrounded by key terms, such as "EFL," "college student," "group discussion," "perceived learning outcome," "reading strategy," "teaching mode," "mobile learning," etc. The second cluster relates to "blended learning model," "information technology," "WeChat," "Weibo," "large class," "language proficiency level," "data mining algorithm," etc. The third cluster relates to "computer-assisted software" and different online

learning platforms. The fourth cluster relates to "critical thinking," "online classroom," "flipped classroom," etc. **Table 3** lists the 15 most cited keywords while **Figure 4** shows the citation burst in the number of keywords correlated in **Figures 2** and **3**. Burst detection uses standard analysis to identify hot spots that emerge abruptly, such as a burst in the number of articles, citations, or keywords. Based on the visual analysis, the agreement of researchers and scholars can thus be summarized as follows.

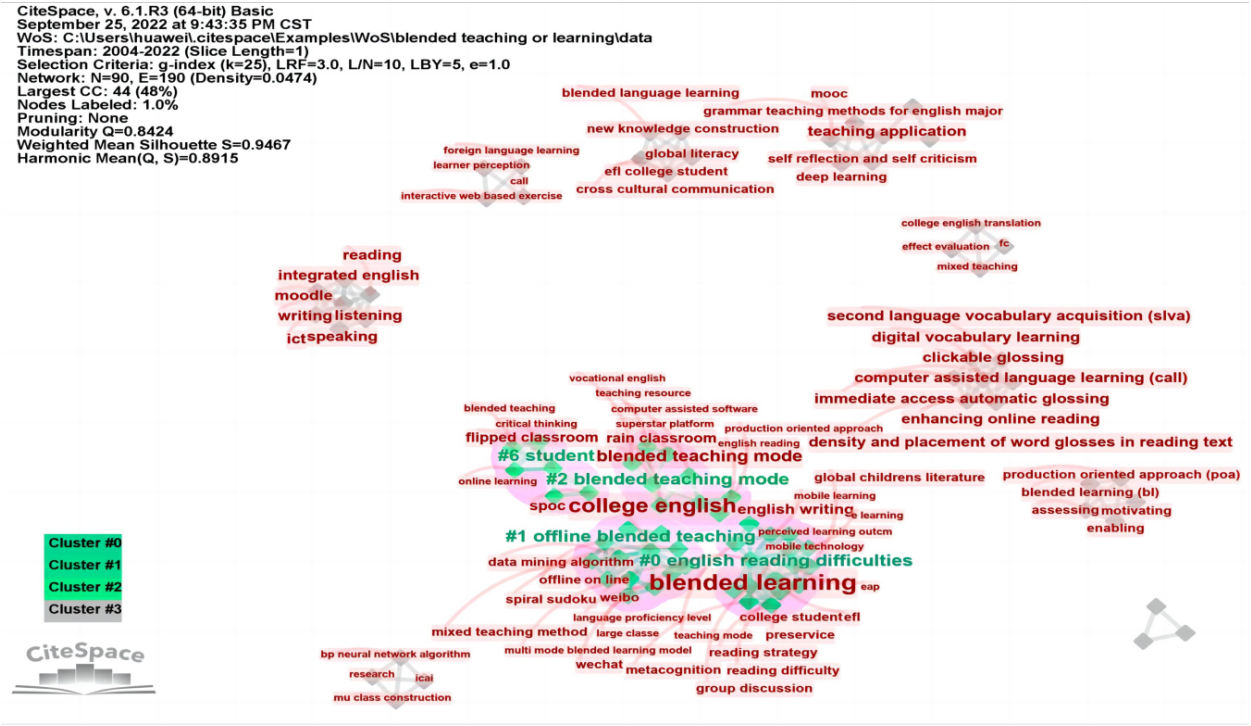

Figure 2. College English Reading Blended Learning (CERBL) research knowledge domain: the cluster analysis

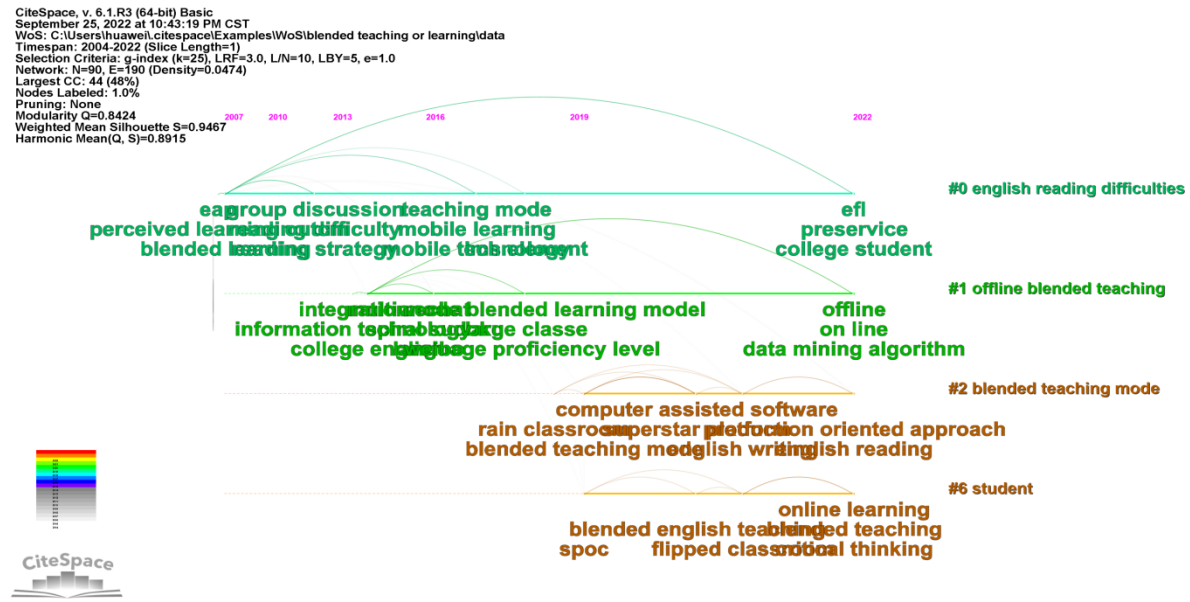

Figure 3. A timeline map of the keywords along with clusters in the research domain

Table 3. 15 most cited reference keywords

Cited reference	Frequency	Year
Blended learning	7	2007
College English	5	2014
Blended teaching mode	3	2019
Flipped classroom	2	2021
Rain classroom	2	2019
Teaching application	2	2021
SPOC	2	2019
WeChat	1	2016
Enhancing online reading	1	2012
Integrated English	1	2020
Mixed teaching method	1	2020
Production oriented approach	1	2020
Computer assisted teaching	1	2017
Digital vocabulary learning	1	2012
Meta-cognition	1	2012

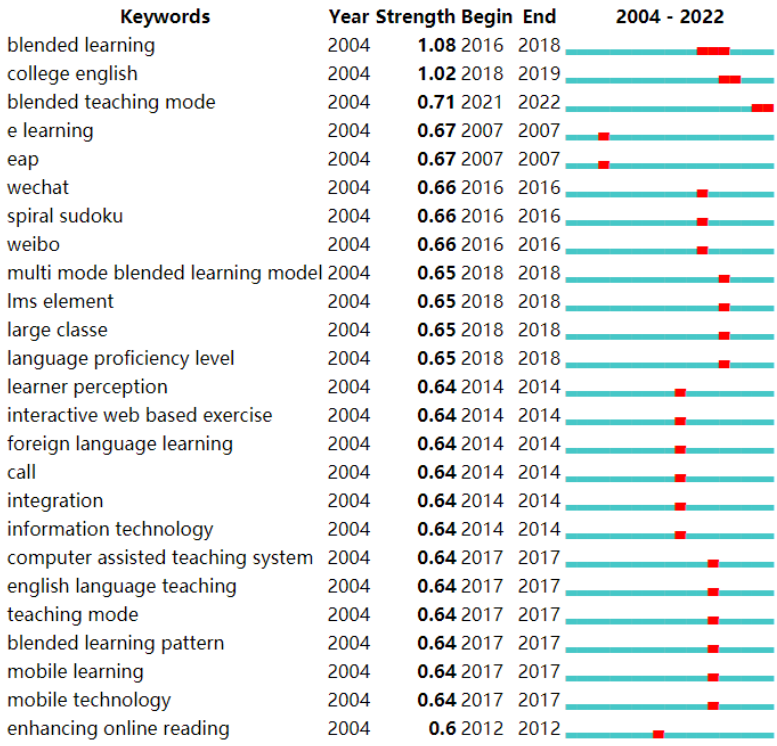

Figure 4. Top 25 keywords with the strongest citation bursts

Firstly, English as a Foreign Language (EFL) in college has been a significant subject for studying blended learning models. As an essential skill of EFL, second language (L2) college English reading has been modified to prove whether blended learning can enhance students' critical thinking and utilization of reading strategies aligned with what Wittrock presented about the generative process of reading comprehension. In addition, there was other prior research on the combination of English reading and writing [5–7], reading and vocabulary learning [8], reading and translating [9], and reading in global literacy [10].

Secondly, blended learning has been proven efficiently conducive to collaborative reading tasks, especially in large classes. Wang and Yang proposed that the blended learning model is the key to integrating information technology in extensive reading courses [11]. Many researchers have been trying to develop effective teaching or learning models based on computer-assisted technology to yield more online and offline interactions between teachers and students, and between students [12–15]. Plus, researchers have designed an English intelligent computer-assisted teaching system to cater to each student's needs and creative reading tasks, while engaging and simplifying the evaluation of the teaching process [16,17]. Wu developed a hybrid learning model for college English reading based on a data mining algorithm to gather the blended teaching materials, while constructing the blended learning support and debugging the database which supports the blended learning environment [18]. Instead of designing and programming a blended learning system, some scholars suggested that mobile technology-assisted tools, such as WeChat and Weibo, offer unrivaled learning interaction and efficiency benefits because of their familiarity and practical usage in daily life [19,20].

Thirdly, more scholars have begun to analyze the maladjustment problems faced by students when engaging in the learning process, which include poor blended learning attitudes and information technology application skills [21], as well as students' difficulties in adjusting themselves to the online learning workload and various online platforms [22]. When implementing the blended learning model, teachers often misunderstand what they should be doing, and more teachers erroneously assume students would devote more time and effort to it. That is the reason teachers put many resources on the learning platform and design many online activities to facilitate students' engagement. As a result, blended learning becomes ineffective since it only adds to the workload of both teachers and students [1]. Relevant research also demonstrates that in network and hybrid learning environments, students' learning quality is primarily determined by their ability to adjust their learning techniques [23,24]. Rianto found that students acknowledged that e-learning was helpful in their academic progress, but some technical issues and a poor internet connection would lead students to negatively perceive using digital devices to develop their English language skills [25]. However, Li *et al.* believed that anxiety among college students concerning advancing their English reading proficiency could be reduced using web-based scaffolding teaching methods in the classroom [26]. Additionally, this innovative teaching approach would bolster students' confidence and help them to engage in reading English proficiently.

1.3. Pros and cons of blended learning

Numerous researches have centered on perceived learning outcomes and student engagement in this new learning setting due to the change to online learning that began during the COVID-19 epidemic [27–30]. However, there are also some arguments on how blended learning can facilitate L2 students' language proficiency and engagement in a class.

On the one hand, some scholars indicate that technology-assisted blended learning can enhance learning formats, streamline instructional procedures, increase student engagement levels, and enhance the learning experience for students [31–33]. In Wright's empirical research, students who preferred the online course listed speed, ease, and flexibility of time and place, as the reasons for their choice if adequate support was provided.

However, they also recognized the importance of face-to-face classroom teaching, which was beneficial and should have been scheduled as a necessary section for teachers to provide guidance in task completion. By interacting with others within a predetermined period, students can still retain the core elements of their studies without face-to-face interaction [34].

On the other hand, due to different learning conditions or expectations, Wright indicated that the development of blended learning is still in its early phases, especially in poorer nations, and many difficulties have yet to be addressed [35]. In many parts of South-East Asia, asynchronous online lessons are still more common than synchronous ones, possibly due to the difficulty in acquiring reliable Internet connections. At a university in Malaysia, less than 5% of students preferred blended learning, 50% preferred face-to-face teaching, and 37.5% preferred online courses. Students cited gaining more profound knowledge through face-to-face learning, where teachers can provide advice and guidance [35]. Furthermore, Burston claimed that mobile devices provide content rather than enhance learners' communication skills. Another difficulty with using the online learning modality is maintaining students' learning engagement [36].

2. Research trends in blended learning retrieved from China National Knowledge Infrastructure (CNKI)

2.1. Data retrieval and description

Figure 5 shows the general trend analysis of published articles within CNKI search, it was created by Tsinghua University and Tsinghua Tongfang Co., Ltd. in 1999. Data was retrieved from it on September 25, 2022. Based on the analysis, it is not until 2016 that blended learning has become a widely adopted method for different courses taught in colleges and universities in China. In **Figure 6**, foreign language learning has the most significant proportion among colleges, which ranks at 41.28%. When searching "college English blended learning" (CEBL) in CNKI, 71 records were retrieved by specific settings of the advanced query, and there was an increase in publications for 2019 and 2022, as shown in **Figure 7**. However, there is insufficient empirical research on the teaching effect of blended learning approaches applied in college English reading courses, with only 30 academic articles published in CNKI in the last two decades.

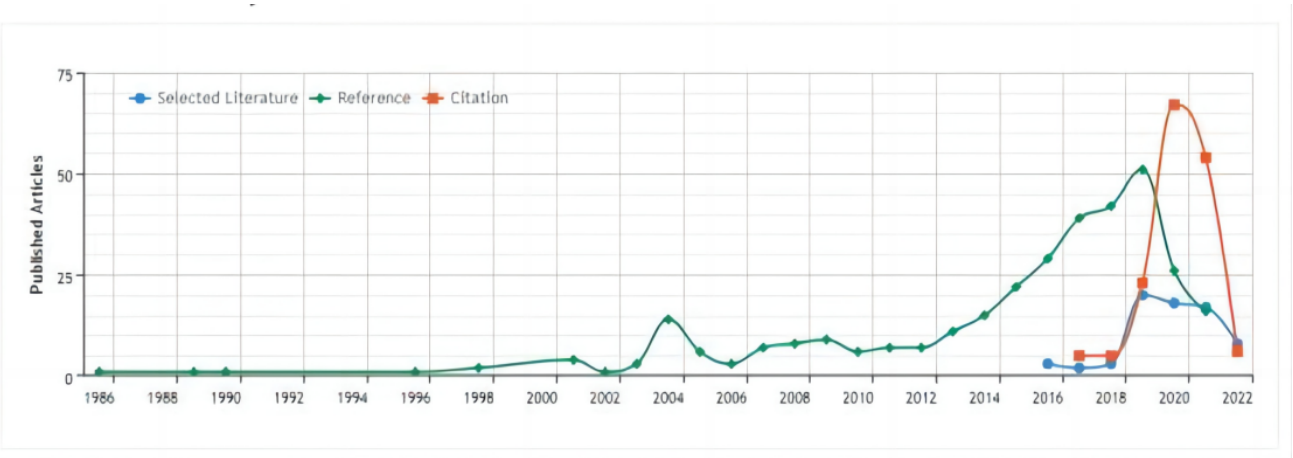

Figure 5. General trend analysis of published articles within CNKI search

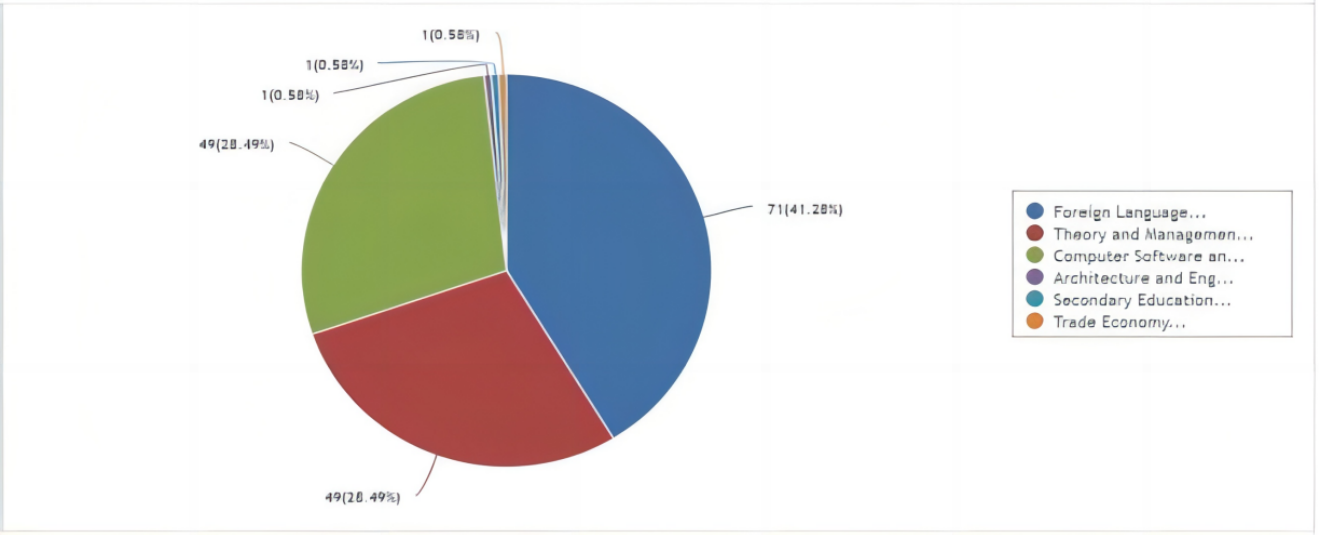

Figure 6. Courses distribution analysis of published articles within CNKI search

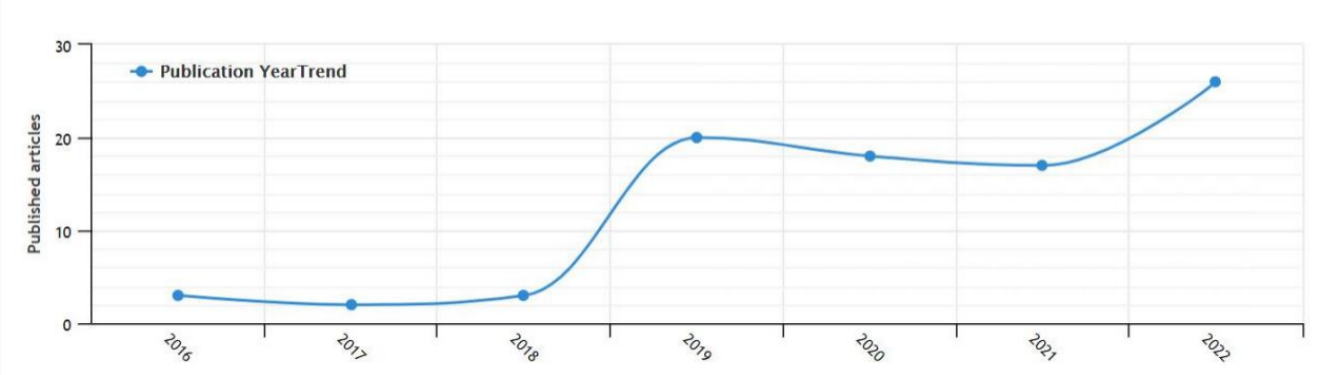

Figure 7. General trend analysis of published articles related to CEBL within CNKI search

2.2. Blended learning model

Blended learning can expand and improve the traditional teaching quality and promote teaching reform that advocates student-centered learning. Furthermore, in the Internet era, the development of platforms and multimedia supports the application and implementation of blended learning models [37]. The timeline map of the research keywords and clusters has shown that in the last three years in mainland China, many front-line teachers have been actively implementing various teaching reforms by integrating information technology and curriculum in a blended learning model. In higher education, because most students have specific professional backgrounds and relatively strong self-learning and thinking abilities, blended learning is usually conducted through face-to-face instruction and an online learning community (**Figures 8** and **9**.) In addition, the construction of many massive open online courses (MOOCs) and small private online courses (SPOCs) teaching English and the application of foreign language learning platforms have accelerated the popularization of blended learning or teaching models [38]. Many empirical studies have proven that blended learning has helped to increase college students' English reading scores on different tests, and improve their independent learning capacity and active learning attitude toward college English reading courses [15].

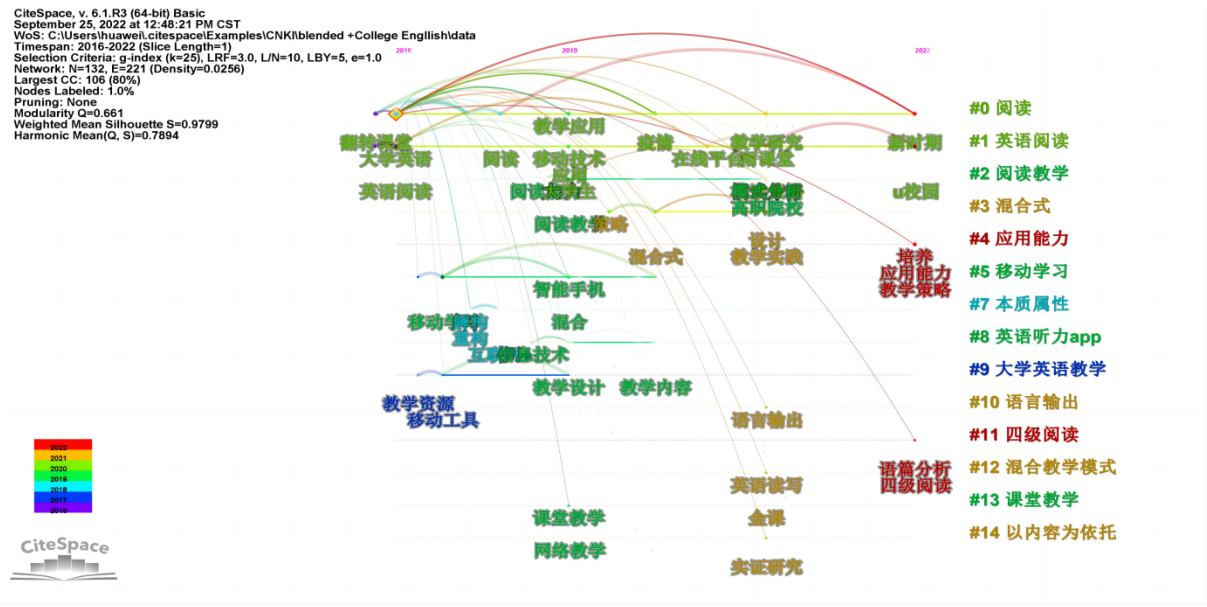

Figure 8. A timeline map of the keywords along with clusters in CERBL research domain

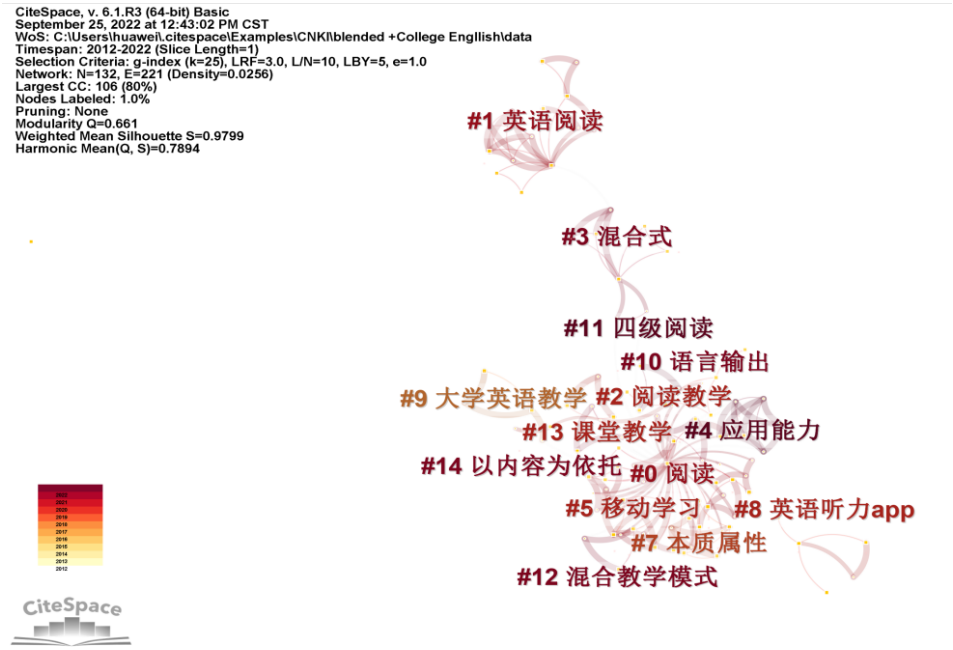

Figure 9. CERBL research knowledge domain: the cluster analysis

3. Summary

Based on the data selected from Scopus and CNKI, the following can be summarized:

In terms of the blended learning model, there are some differences in the breakthrough points for the instructional design of blended learning in college English reading. Domestic researchers build a blended learning model theoretically and then conduct empirical research. Foreign researchers tend to put forward and verify blended learning strategies and methods from a micro perspective, aiming at a specific learning environment.

As for the research methods, domestic researchers tend to adopt a mixture of empirical and non-empirical methods, while foreign researchers are inclined to adopt multiple empirical analysis methods.

In constructing the theoretical framework, domestic and foreign researchers focus more on designing a blended learning model, and less on exploratory and explanatory research. However, the future of blended learning research is critical, and the most important research may be the combination of blended learning and students' participation in classroom tasks and adaptive learning.

4. Future study

According to Feng *et al.*, the evolution of blended learning is shown in **Table 4** [4].

Table 4. The evolution of blended learning concept

	Technology application stage	Technology integration stage	Internet era stage
Physical dimensions	Combination of online and face-to-face	Proportion of time allocation	Mobile technology, combination of online and face-to-face classroom
Teaching dimension	Application of technology	Combination of teaching strategies and methods	Learning experience
Research focus	Information technology	Interaction	Student-centered learning
Research perspective	Technological perspective	Teachers' perspective	Students' perspective

Although there are many empirical studies on technological and teachers' perspectives when it comes to the evaluation of students' learning experience and their interaction from the micro level, few findings can be found. However, there are three main research prospects worthy of discussing, that require a well-planned solution.

Firstly, to better understand students' learning experience, research can review the engagement in blended learning settings such as online and face-to-face reading collaborative tasks in class, and assess students' engagement in reading learning contexts [39]. For example, the interaction of behavioral, affective, cognitive, and social factors within a blended learning system can be studied.

Secondly, teachers frequently employ electronic resources such as e-books, as teaching aids for blended learning, but additional study is needed to increase the interactivity of e-books in a classroom setting. In blended learning approach, teachers should fully utilize animation, simulation, and problem-solving based on the discussion in a virtual setting to motivate students to engage in the learning process, so that learning becomes more interactive and in-depth.

Thirdly, researchers should recognize that class sizes are generally large in China, as mentioned in the second cluster center of Scopus, hence there needs to be more empirical studies on the scale of blended learning in a classroom. For example, the resources allocated for each student and the number of students arranged in a blended learning class for better learning outcomes need to be statistically analyzed.

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Disclosure statement

The author declares no conflict of interest.

Author contributions

L.L. conceived the idea of the study, analyzed the data, and wrote the paper.

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