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Review

Effectiveness Study on Online or Blended Language Learning Based on Student Achievement: A Systematic Review of Empirical Studies

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Abstract: The ubiquitous impacts resulting from the COVID-19 pandemic have profoundly changed the education sector and marked research interest in online or blended learning can be witnessed. As a pervasive learning activity of paramount significance, online language learning has aroused widespread attention. Nonetheless, few systematic reviews concerning the effectiveness of online language learning have been published. With the help of CiteSpace, this study systematically investigated 103 included articles from the SSCI of empirical studies from 44 journals for the purpose of filling the research gap in this field, providing a better understanding of the research trends, exploring effective ways to implement online language courses, and testifying to the ability of CiteSpace to track research hotspots. The findings show that effectiveness studies on online language learning principally focus on assisted tools (42.72%), instructional approaches (36.89%), and specific courses (20.39%). Lack of adequate cooperation among research institutions and the dominant position of online English learning (82.52%) can be witnessed. Despite the small sample size of 103 included articles, the validation of CiteSpace in terms of tracking the research trends or hotspots is confirmed. However, the proportion of each research focus is not compatible with the results of a comprehensive full-text analysis. This literature review also probes into various methods to measure effectiveness more scientifically and effective ways to implement online language courses. Theoretical as well as practical implications and future research directions are clarified.

Keywords: online language learning; blended learning; student achievement; effectiveness; assisted tools; instructional approach; specific courses; literature review

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1. Introduction

The COVID-19 outbreak was declared by the World Health Organization in January 2020 [1], and it has spread across the globe and created a public health emergency [2,3]. However, as the indispensable sector of society, the education sector has properly addressed the challenges and problems by the replacement of traditional learning in the classroom with online learning and distance learning [4]. With the advancement of artificial intelligence, robotics, virtual reality, and the surge in digital information, an increasing number of courses are being implemented online, including some lectures of the university during the pandemic, which has given rise to substantial changes regarding the teaching, learning, and evaluation process. Teachers are required to learn more course-related technologies, while students have to be accustomed to the new learning mode [5]. These days, online learning has appealed to many researchers because of COVID-19 and quarantine measures, and a sharp interest in online and distance learning can be witnessed [6–8].

It is since 1998 that the Internet has been applied to online learning and teaching for students and teachers in the United States of America [9]. Despite the fact that online learning is often used interchangeably with distance learning, e-learning, and Internet-based learning, it was clearly defined as a student's "access to learning experiences via the

use of some technology" by Moore in 2011 [10] (p. 30). Likewise, online language learning refers to students' experience of learning a language online supported by some technology. Blended learning, also known as hybrid learning, refers to "any combination of learning delivery methods, including most often face-to-face instruction with asynchronous and/or synchronous computer technologies" [11] (p. 231), which makes the best of traditional learning in classrooms and advanced technologies. This systematic review will include research that explores effectiveness based on students' perceptions or achievements in both online learning and blended learning. Effectiveness was intended to be measured from the perspective of student achievement. If the language knowledge or skills of students are improved or enhanced, then it is said that effectiveness is confirmed. Language knowledge or skills may vary according to different learning content.

Although significant strides have been made to enhance the educational quality of online courses across the whole world, Viola argued that the effectiveness of online psychology courses is negative due to an obvious lack of engagement [12]. Is such a proposition consistent with the situation of those students learning a language online? The question calls for further attention; however, existing literature reviews concerning the effectiveness of language learning in online courses are rather scarce. Few systematic reviews about the effectiveness of relevant dimensions of online language learning can be found through database searching on the Web of Science. Acquah examined the effectiveness of digital games on high school students who were learning a second language, and the research method, gaming platform, game genre, design purpose of games, and key game features were analyzed. It was found that 70% of the report outcomes from the included studies were completely positive, and digital learning games were used as effective learning tools. Digital game-based language learning (DGBLL) was considered to be an interesting and engaging way to learn a second language [13]. Apart from this review, others have barely focused on the online learning effectiveness of courses in other disciplines such as health professions, and studies examining physiotherapy in particular [14–18] critically reviewed the effectiveness of online physiotherapy learning and users' perceptions of it. Cook summarized the effectiveness of Internet-based health profession learning compared with no intervention and a noninternet intervention [19].

The objectives of this study are to fill in the gap that almost no studies concerning the effectiveness of online language learning can be found, to explore the effectiveness of online language learning from the perspective of student achievement, to provide effective methods to measure the effectiveness of online language learning as well as effective ways to implement online courses, and to testify to the ability of CiteSpace to track research trends or hotspots, which demonstrates both theoretical and practical contributions. This systematic review attempts to address the problems by reviewing empirical studies on learning outcomes or student achievement. As defined by the American Educational Research Association and the American Psychological Association, empirical studies are performed by direct or indirect means of observations or experiments, and research methods are not limited to what is commonly called qualitative and quantitative methods [20,21]. In the context of this study, effectiveness should be measured by direct or indirect means of observations or experiments, such as a combination of qualitative and quantitative approaches and mixed methods to collect data, including quasi-experimental design, interviews, surveys, questionnaires, self-reflection, observations, feedback, and so on. As for the significance of this study, it lies in the ability to provide a better understanding of the status quo about online language learning and shed light on how online learning influences language learners and its effectiveness based on student achievement, which refers to the overall performance of students after learning a language online, especially the enhancement of language proficiency, either language knowledge or skills. This study was carried out to answer the following questions:

(1) What are the status quos, research trends, or hotspots concerning the effectiveness of online or blended language learning?

(2) Which methods are appropriate for measuring the effectiveness of online language learning?

(3) How can teachers implement online language courses more effectively?

(4) Will the employment of CiteSpace be conducive to examining the research trends or focus in this field?

In this study, specific courses in online language learning refer to a series of language lessons or lectures given by teachers in order to help students to acquire new language knowledge or learn new language skills. As for assisted tools, they are defined as the thing, stuff, or instrument that students or teachers use in the online or blended courses to help them learn new language skills or achieve teaching goals. The main purpose of using assisted tools is to enhance the performance of students in learning a language. The instructional approaches in this study refer to the ways or methods that teachers use in language courses to facilitate students' language learning in a more effective way so as to improve their language skills or knowledge.

This literature review is organized through five sections. In Section 1, the research background, significance, questions, and gap are presented. In Section 2, the research methods of this systematic review are clarified, including the process of database searching, inclusion and exclusion criteria, article screening, and data extraction. In Section 3, an overview of 103 included articles, a visualization analysis based on CiteSpace, and a comprehensive full-text analysis are made. Section 4 describes the interpretations of major findings, theoretical and practical implications, and future research directions. Concluding remarks are presented in Section 5.

2. Research Method

In this study, a systematic literature review method was adopted to demonstrate a review concerning online language learning effectiveness and grasp the state of the fast-growing and complex online learning domain. However, in many research fields, the complexity of science mapping is commonly shared [22]. In this research, CiteSpace, a widely used and continuously evolving software, was used to help to implement visual analytic functions. The version of the software used in this study was CiteSpace.6.1.R2 (developed by Chaomei Chen, http://cluster.cis.drexel.edu/~cchen/citespace/, accessed on 25 March 2022). With the help of CiteSpace, such functions as time distribution analysis, keyword co-occurrence analysis, cluster analysis, burstiness analysis, and co-citation analysis can be executed, and the research trends and relationships among multitudes of research topics can be understood [23,24]. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) is a reporting guideline with a checklist of 27 items designed to avoid research bias and potential problems, which is conducive to obtaining scientific and objective reporting of systematic reviews [25]. This systematic literature review was conducted with the help of the PRISMA 2020 statement, which includes the checklists, explanation, and elaboration, as well as the flow diagram. In accordance with the PRISMA guidelines, the information sources, eligibility criteria, search strategy, selection process, and data collection process are described in detail. Therefore, the general research framework of this study included data collection through database searching, inclusion and exclusion criteria for the review, literature selection, data extraction, holistic analysis via CiteSpace, and in-depth analysis. The data collection and extraction under the guidance of PRISMA lay a solid foundation for the following comprehensive full-text analysis.

2.1. Data Collection

When it comes to the input data of this systematic review, the data were generated by the collection of literature from multiple search queries to the Web of Science database, including both the Social Science Citation Index (SSCI) and Arts & Humanities Citation Index (A&HCI), which ensured the quality and credibility of the search results. This study aimed to investigate the effectiveness concerning any topics in online or blended language learning based on student achievement. Due to the limited number of articles, it was at-

tempted to acquire much more results at the beginning of the data collection process. Firstly, "online" or "distance" learning is more general than blended learning, which enabled to acquire more results regarding online learning. Moreover, the term "learning" or "courses" is conducive to obtaining the effectiveness results from students' perceptions or based on student achievement. Finally, the terms "language" and "effectiveness" were essential in this study, so they were mentioned in all four search terms of database searching. Hence, the terms for article searching included "online language learning effectiveness," "distance language learning effectiveness," "online language course effectiveness," and "distance language course effectiveness." As for the time span, it was chosen from 2006 to 2022 because the year 2005 saw increasing accessibility of information and communication technology (ICT), and the technology of online courses has demonstrated considerable advances since 2006 [26]. A review of technology-supported courses should take this factor into account, so the year 2006 was selected as the start year. The language of the literature was selected as English, and the document type was limited to articles only. The search queries and refinement procedures are shown in Table 1. Based on all the refinement procedures above, the query generated 222 results.

Table 1. Search queries and refinement procedures.

Set	Results	Refinement
1	243	Topic: ("online language learning effectiveness" OR "distance language learning effectiveness" OR "online language course effectiveness" OR "distance language course effectiveness") Indexes = SSCI, AH&CI Time Span = 2006–2022
2	239	Refined by LANGUAGES: (English)
3	222	Refined by DOCUMENT TYPES: (Article)

2.2. Specifying Inclusion and Exclusion Criteria

In line with the purpose of this systematic review, the following criteria were specified to remove irrelevant and redundant articles. The inclusion and exclusion criteria were as follows: (1) Empirical studies—the research methods should conform to the norms of empirical research, such as direct or indirect means of observations or experiments, which are not limited to qualitative and quantitative methods; thus, reviews or meta-analyses were excluded. (2) Language—the research should focus on online language learning instead of online courses in other disciplines, such as courses related to environment or disease. To be more specific, language refers to natural language in this context, such as Chinese, English, French, and so on. Thus, artificial language, such as programming language, was excluded. (3) Online—"online learning" refers to students' "access to learning experiences via the use of some technology" [10] (p. 130). On the basis of this definition, the learning activities of the research should take place, whether purely online or in technology-supported classrooms. Both online learning and blended learning were taken into account. (4) Effectiveness—the study should focus on the effectiveness of courses and new technologies of online learning based on student achievement or students' perceptions of online or blended learning.

2.3. Article Screening

Through rounds of article screening based on a thorough analysis of the titles, keywords, and abstracts of 222 articles that were found after the refinement procedures, 103 articles were finally identified to be relevant to and appropriate for this systematic review and were included in the research. Detailed screening steps are shown in Figure 1. Overall, article screening was carried out based on the aforementioned criteria. Twelve articles, whose types belong to review or meta-analysis, were excluded because they were not empirical studies, and their research methods were not direct or indirect means of observations or experiments. The learning content of 53 articles was not a language but some

content from other disciplines. The students were acquiring knowledge about environment, anatomy, tobacco, disease, nursing leadership, dementia, agriculture, and so on, rather than language. Hence, these 53 articles were excluded. It should be noted that a large proportion of articles focused on programming languages, including Java, Python, and natural language processing. A total of 17 articles investigated traditional learning activities offline in classrooms. A small number of articles did not explore effectiveness from the perspective of student achievement. In total, 103 articles were selected for inclusion, while 84 articles were excluded.

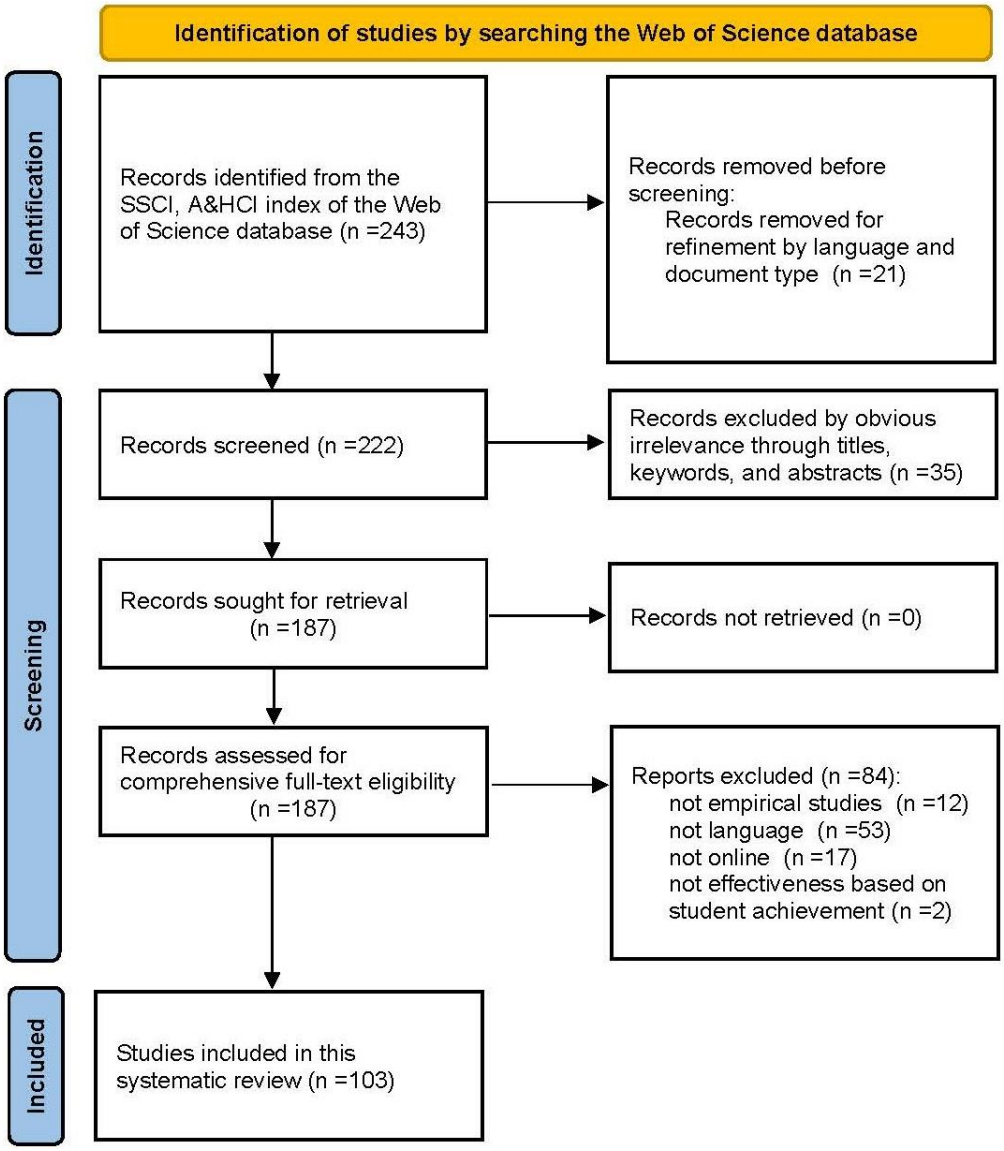

Figure 1. Flow diagram of detailed steps of article screening.

2.4. Data Extraction

Inductive thematic analysis refers to "a process of coding the data without fitting into a preexisting coding frame, or the researcher's analytics preconceptions" [27] (p. 83). With the help of this technique, all 105 articles were coded in order to keep track of the relevant literature, draw key information, and identify salient themes. At first, the articles were generally coded by researcher, methodology, journal, and publication date. Next, another round of coding was guided by language type, specific learning content, student type, major themes, key findings, reference number, and so on. Finally, all the findings of the selected articles were summarized. The specific learning content was coded in order to

guarantee whether the course was a language course because this study only considered online language learning. Major themes were coded for classification of the research focus, and key findings were coded for clarification of the effectiveness of each research focus. Student type was coded for a general understanding of the participants in the study, especially for the convenience of scholars who aspire to conduct similar future research.

2.5. Data Analysis

A holistic analysis based on CiteSpace and a full-text in-depth analysis was conducted. Visualization analysis of the annual publications, journals, keyword co-occurrence, keyword burstiness, keyword cluster, leading countries or regions and research institutions, authors, and co-cited authors comprehensively revealed the pivotal content and research trends with reference to the effectiveness of online or blended language learning. The full-text in-depth analysis demonstrates as much detailed information as possible concerning the effectiveness of online or blended language learning.

3. Results

3.1. Overview of the Included Articles

According to the information of the queries, although the initial records were searched in both the SSCI and the A&HCI of the Web of Science, it was found that all of the 103 included articles belonged to the SSCI, including some articles belonging to both the SSCI and A&HCI. Table 2 shows the bibliographic statistics of all the included articles. An average of 13.95 citations per article and 1437 times cited can be observed, which further guarantees the quality and credibility of the included articles.

Table 2. Bibliographic statistics of 103 publications extracted from Web of Science.

Total Publications	H-Index	Sum of Citing Articles	Sum of Times Cited	Average Citations per Item
103	23	1323	1437	13.95

In accordance with the statistics in Figure 2, the annual publications concerning the effectiveness of online language learning remained stable from 2006 to 2012, with only two articles on average each year, showing that scholars paid little attention to this topic at that time. However, the number of publications has risen significantly since 2012, which illustrates that much progress has been made in online or blended language learning domains. Another significant rise in annual publications was observed in 2020, when COVID-19 began to affect activities in all walks of life across the whole world, especially in the education sector. Students and teachers have had to take advantage of online learning due to the spread of the pandemic and quarantine measures. During this period, researchers focused on the effectiveness of online language learning and aimed to enhance students' online learning effectiveness. A total of 18 publications concerning this topic were found in 2021, which is the highest number from 2006 to 2022. Although the number decreased to 8 in 2022, it does not mean scholars are not interested in this topic anymore. Instead, it is primarily due to the incomplete calculation until April 2022. According to a rough estimate, it is believed that the number will continue to increase provided that all the publications in 2022 are calculated.

In Table 3, 15 journals are listed based on the number of included articles, and the journal *Computer Assisted Language Learning* has the highest proportion, accounting for 13.59%, with 14 articles published. The number of included publications in this journal is almost two times the number of articles published in the other journals. The quantity of articles published in the other journals is less than 10, whose proportion is relatively smaller. The journal *Sustainability* published four relevant articles, which account for 3.88%.

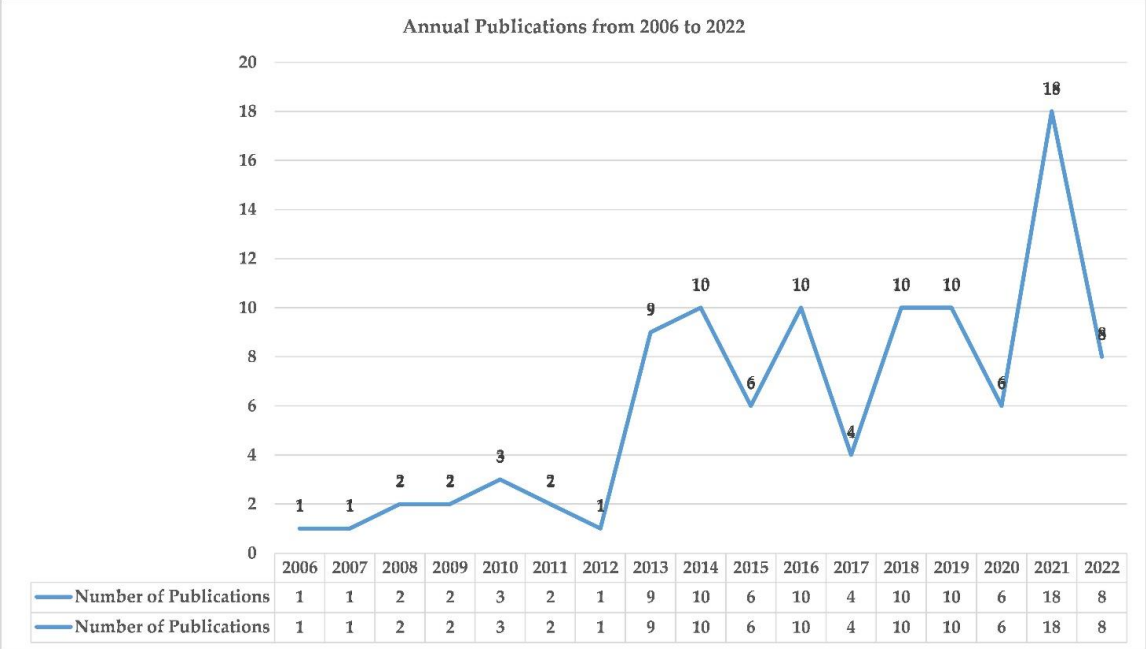

Figure 2. Annual publications from 2006 to 2022.

Table 3. Top 15 journals that published most of the included articles.

Journal	Number of Publications	Proportion (%)
Computer Assisted Language Learning	14	13.59
Recall	8	7.77
Interactive Learning Environments	7	6.80
Computers Education	6	5.83
Educational Technology Society	5	4.85
Language Learning Technology	5	4.85
Sage Open	4	3.88
Sustainability	4	3.88
British Journal of Educational Technology	3	2.91
Education and Information Technologies	3	2.91
Journal of Computer Assisted Learning	3	2.91
Language Teaching Research	3	2.91
IEEE Transactions on Learning Technologies	2	1.94
Innovation in Language Learning and Teaching	2	1.94
Interpreter and Translator Trainer	2	1.94

3.2. Visualization Analysis Based on CiteSpace

3.2.1. Keyword Co-Occurrence Analysis

The most prominent and important keywords and their co-occurrence relationship in the effectiveness of online or blended language learning are presented in Figure 3, which provides general knowledge of this topic. Based on the information from this figure, the investigators will master the key research content in this field. Based on the statistics provided by CiteSpace and Figure 3, the top 20 keywords are: "student, language, English, online, education, design, classroom, acquisition, learner, foreign language, communication, blended learning, distance learning, computer-assisted language learning, skill, impact, comprehension, framework, technology, environment," through which the research trends can be witnessed. Figure 4 presents the keywords that co-occur with the keyword "language," and the specific research content of language study can be analyzed. What stands out among all the keywords is the language of English, showing that English received much more attention than other languages. Hence, the effectiveness of learning English online, rather

than other minor languages, received extensive attention, and it is still the research hotspot. It is evident that scholars have focused on the impact that online or blended learning has made on English language learning, especially the comprehension of various English skills. It can be observed from Figures 3 and 4 that many keywords related to technological approaches are presented, and their node sizes are relatively larger. Hence, one potential research focus is related to these technological approaches, which refer to instructional approaches in this study, and the effectiveness of these instructional approaches in online or blended language learning might be one of the research hotspots. As for the centrality, the top five keywords with a higher centrality are "student (0.5), acquisition (0. 24), language (0.23), English (0.22), education (0.14)". The higher the centrality is, the more important the keywords are.

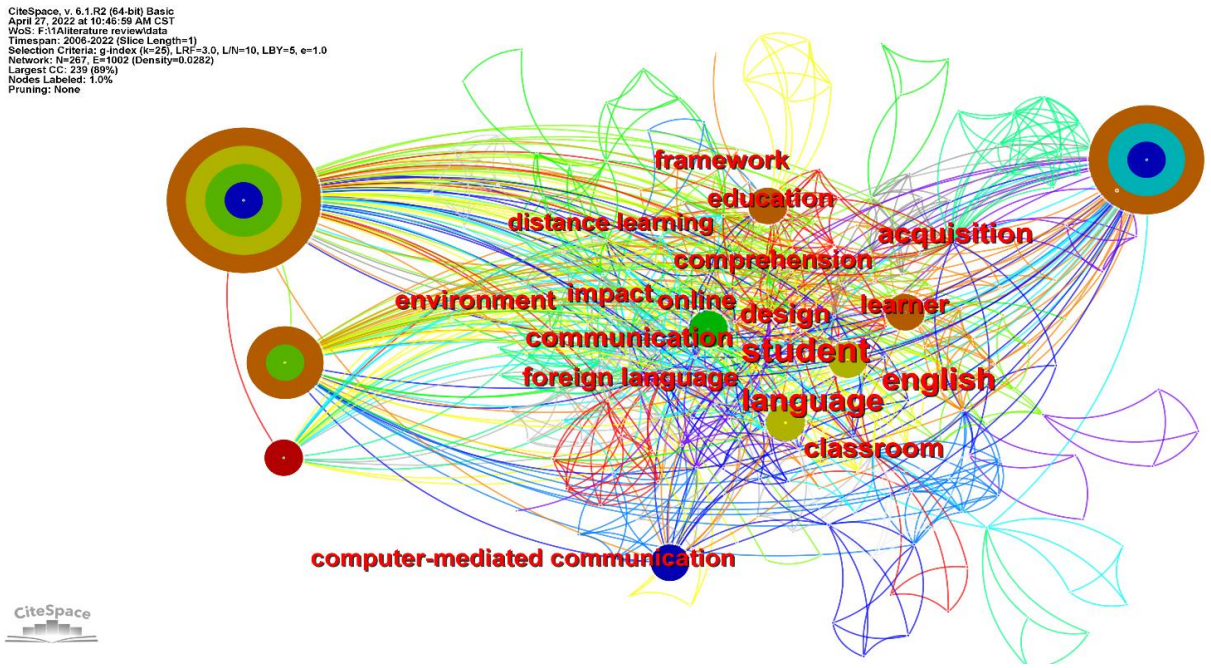

Figure 3. Keyword co-occurrence visualization network analysis.

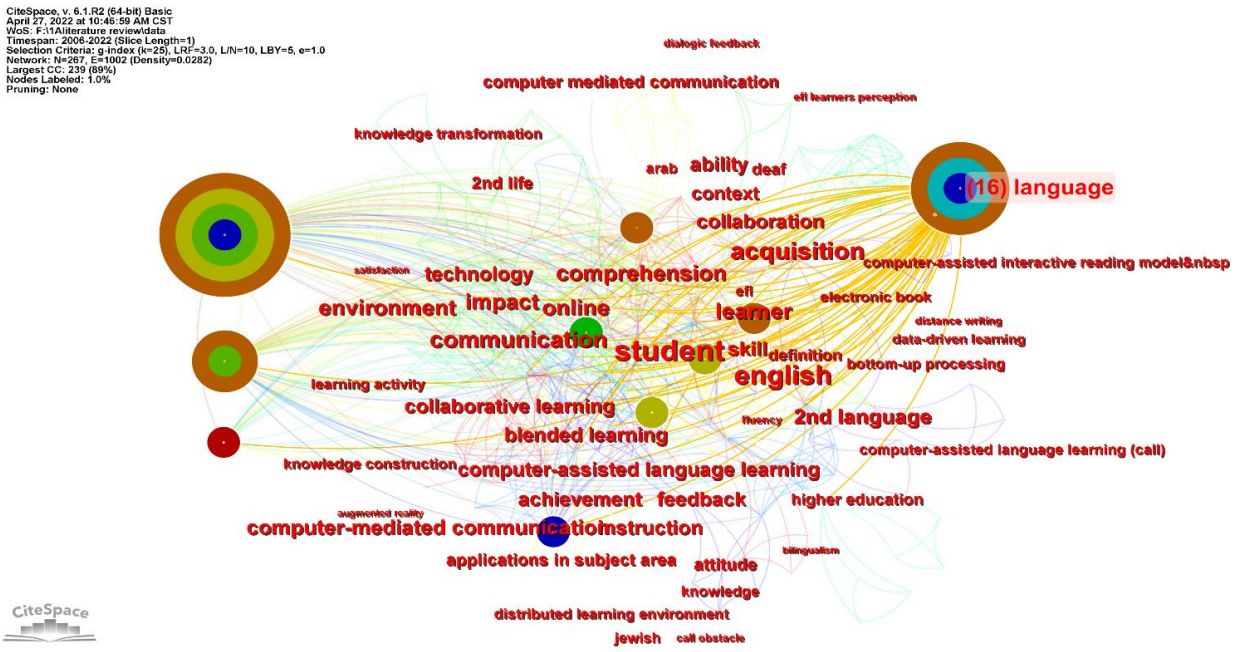

Figure 4. Co-occurrent keywords with "language".

3.2.2. Keyword Burstiness Analysis

Keywords with the strongest citation burst are listed in Figure 5. Some keywords describe the instructional approaches in online learning, such as collaborative learning, feedback, computer-assisted language learning, and computer-mediated communication, which suggests that scholars concentrated on the instructional approaches that are employed in online learning. For example, research into collaborative learning began in 2009 and ended in 2013. During that period, collaborative learning was a research hotspot, and such research trends lasted longer than other hotspots. Most of the keywords listed in Figure 5 lasted for 2 or 3 years, such as environment, computer, acquisition, technology, listening comprehension, and so on. The keywords with the strongest citation burst that lasted for at least 4 years include instruction, collaborative learning, comprehension, computer-assisted language learning, and framework.

Keywords	Year	Strength	Begin	End	2006 - 2022
instruction	2006	0.85	**2006**	2009	
environment	2006	1.72	**2009**	2010	
collaborative learning	2006	1.26	**2009**	2013	
computer	2006	1.11	**2009**	2010	
comprehension	2006	2.04	**2012**	2016	
impact	2006	0.91	**2012**	2013	
acquisition	2006	0.9	**2012**	2014	
2nd language	2006	1.41	**2013**	2015	
applications in subject area	2006	1.05	**2013**	2015	
feedback	2006	1.02	**2013**	2014	
form	2006	1.02	**2013**	2014	
computer-assisted language learning	2006	0.87	**2013**	2016	
technology	2006	2.03	**2014**	2016	
call	2006	1.33	**2014**	2016	
blog	2006	1.16	**2014**	2015	
attitude	2006	0.82	**2014**	2016	
education	2006	0.45	**2014**	2015	
improving classroom teaching	2006	1.16	**2015**	2016	
listening comprehension	2006	1.06	**2015**	2017	
classroom	2006	0.57	**2015**	2016	
higher education	2006	1.73	**2016**	2017	
communication	2006	1.68	**2016**	2018	
language	2006	1.57	**2016**	2017	
framework	2006	1.3	**2016**	2019	
computer-mediated communication	2006	1.03	**2016**	2017	

Figure 5. Top 25 keywords with the strongest citation burst.

3.2.3. Keyword Cluster Analysis

The clusters in the keyword co-occurrence map refer to the irregular areas where the keyword co-occurrence network has gathered together, and each cluster is provided with a label based on closely related words in the areas. Eleven clusters are presented in Figure 6, and the occurrence time of the keywords is also reflected in the figure. The smaller the number of the cluster is, the more keywords in the cluster are contained. In Figure 6,

some clusters are associated with instructional approaches, such as flipped instruction, interactive learning, and collaborative learning, while some clusters are related to assisted tools in online or blended learning, such as dictionary and audio news trainer. Judging from the clusters, it can be implied that the studies concerning the effectiveness of online or blended learning are principally linked with instructional approaches and assisted tools.

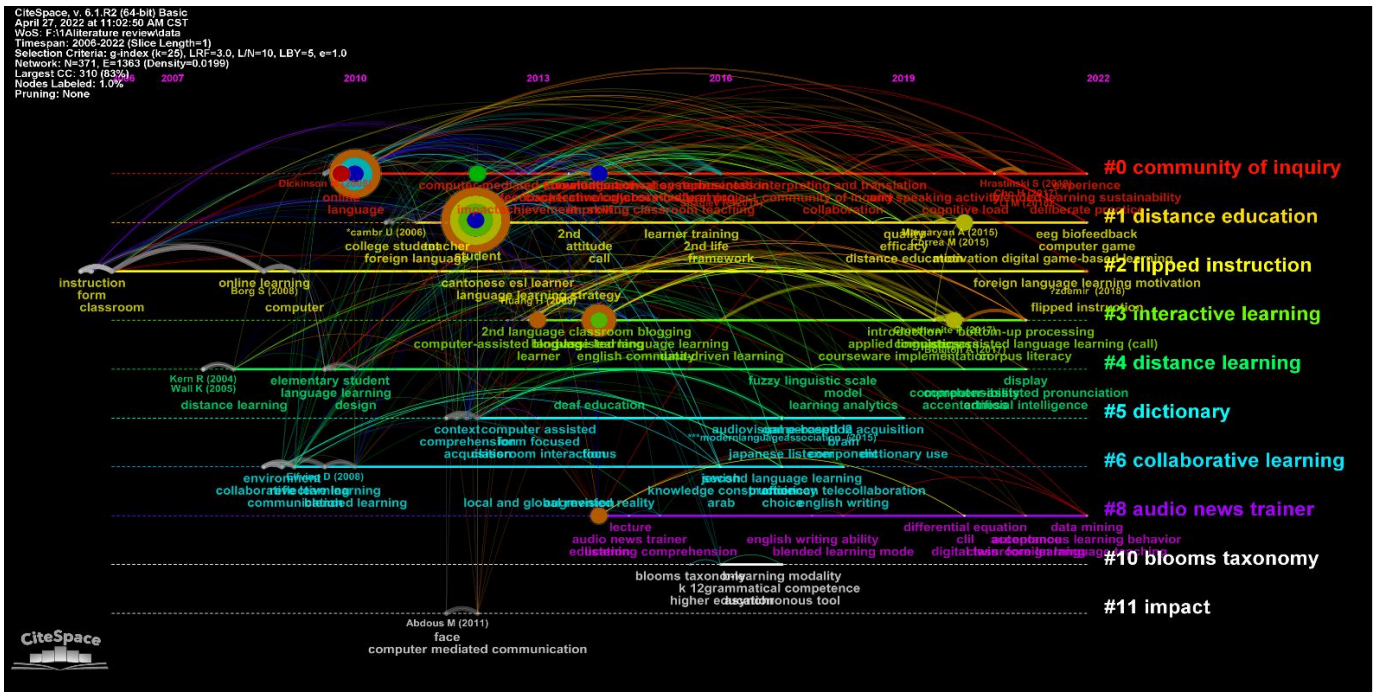

Figure 6. Timeline visualization of the top 11 clusters.

3.2.4. Visualization Analysis of Leading Countries or Regions and Research Institutions

Figure 7 shows the collaborating countries or regions in this field of research, and Figure 8 shows the collaborating institutions. The larger the nodes are, the larger the number of publications that can be found from this country or region. Among all the research institutions from 30 countries, institutions from China published the most articles regarding the effectiveness of online or blended learning. A total of 53 publications were found from China, including 33 from Taiwan of China, indicating that China is one of the active and contributing countries in this field. The second and third contributing countries are the USA and Iran, with a count of 20 and 16, respectively. Meanwhile, the collaborating countries with China are the USA, Japan, Malaysia, Iran, Saudi Arabia, Singapore, and so on. As for the institutions, National Cheng Kung University, Lunghwa University of Science and Technology in Taiwan of China, and The University of Hong Kong in Hong Kong of China made the most contributions to the development of this field, with a total of 13 publications. It is fair to say that China is one of the leading countries in this field, and institutions from China are the major contributors to the study of the effectiveness of online language learning. However, the results of the statistical analysis show that more collaborations between institutions and countries are required in order to make more progress in the studies related to this topic.

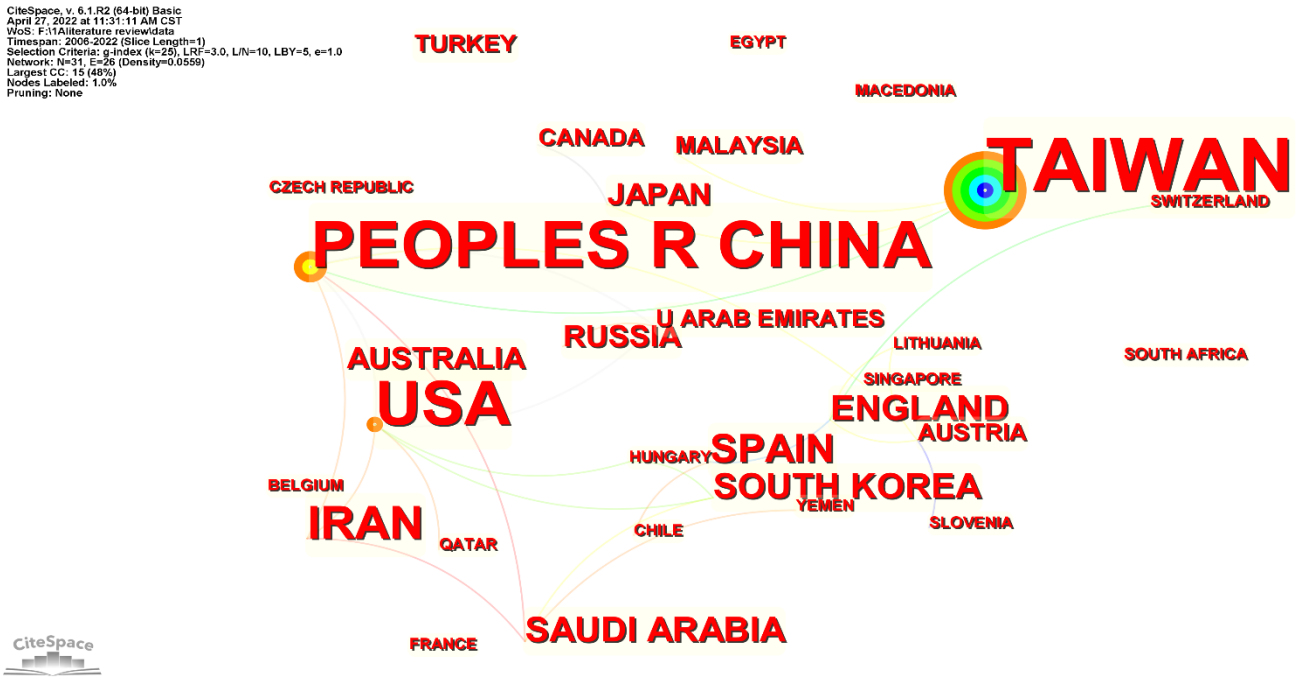

Figure 7. Visualization analysis of collaborating countries or regions.

Figure 8. Visualization analysis of collaborating research institutions.

3.2.5. Visualization Analysis of Authors and Co-Cited Authors

On the basis of Figure 9, the authors who published the most articles about this topic can be found. Ya-Ting C. Yang, a professor at the Institute of Education and Centre for Teacher Education, National Cheng Kung University in Taiwan of China, published three articles about this topic. All the authors, including Y. Chen, W. Hsu, Y. Huang, C. Lin, G. Liu, S. Marandi, R. Shadiev, S. Tseng, W. Wu, and Y. Yang, published two articles. As is shown in Figure 10, Yu-Fen Yang, from the Graduate School of Applied Foreign Languages, National Yunlin University of Science and Technology, is the author who has been cited the

most by the other authors, including W. Hwang, X. Sun, M. Asoodar, H. Huang, W. Hsu, Z. Ge, and so on. The total frequency of Yu-Fen Yang being cited is 13. D. Garrison ranks second with 12 citations, and R. Ellis third, with 11 citations. The other authors who have been cited frequently include R. Ellis, F. Davis, C. Chen, H. Chen, W. Wu, R. Mayer, and so on. It can be judged that the authors mentioned above are some of the most influential and significant co-cited authors in the study of online language learning effectiveness.

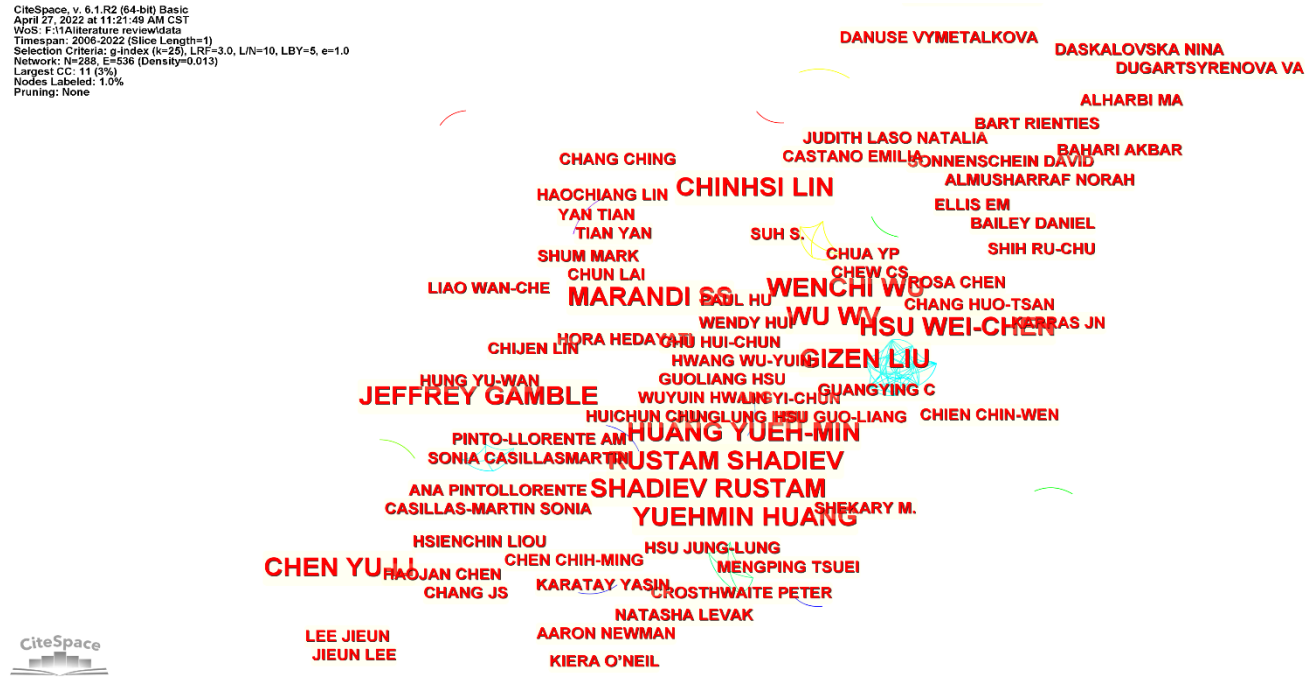

Figure 9. Author collaboration visualization network analysis.

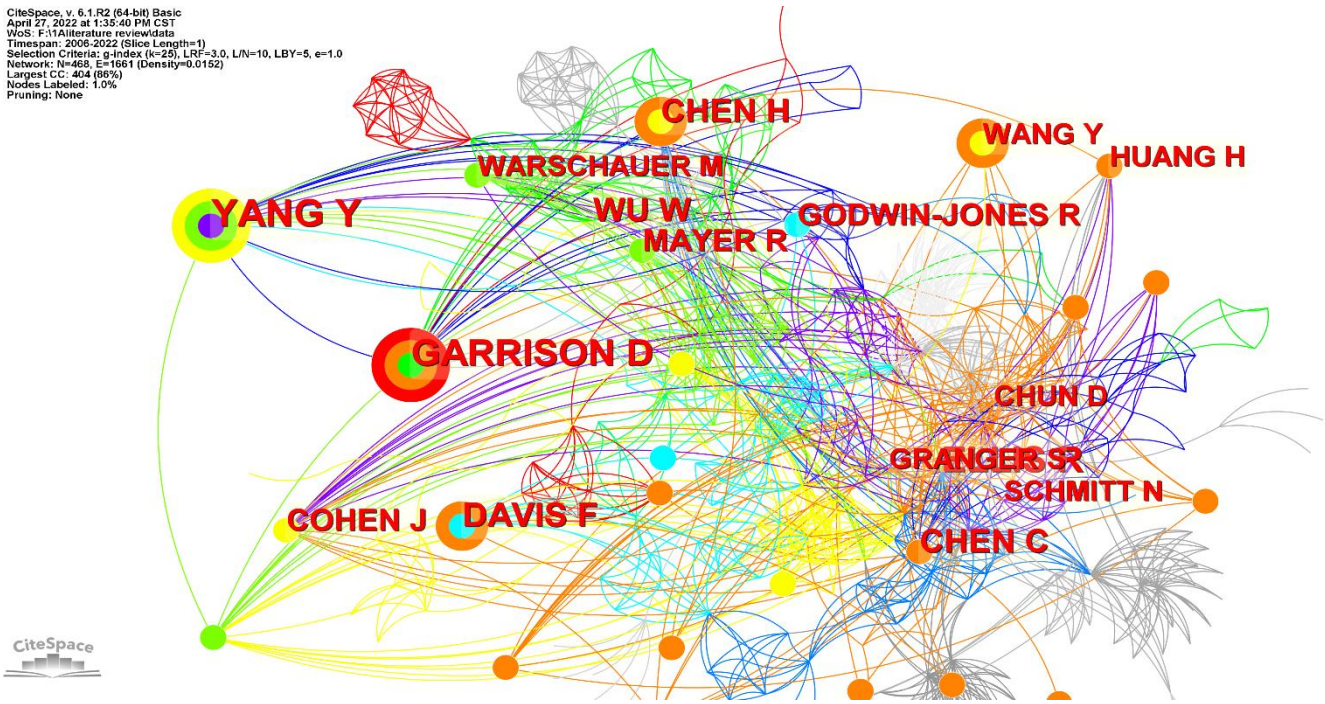

Figure 10. Co-cited author visualization network analysis.

3.3. Comprehensive Full-Text Analysis of 103 Included Articles

Based on the co-occurrence keywords in Figures 3 and 4, the top 25 keywords with the strongest citation burst in Figure 5, and the top 11 clusters in Figure 6, it was found that assisted tools and instructional methods in online or blended learning were frequently presented. Although it was rather challenging to categorize all 103 included articles and summarize their themes on account of the fact that some articles focused on multiple themes, this study attempted to divide the effectiveness studies on online or blended learning into three types: the effectiveness of specific courses, assisted tools, and instructional approaches. The research hotspots of research into the effectiveness of online or blended language learning are assisted tools, which accounted for 42.72% of the 103 articles, and the proportion of articles exploring the effectiveness of instructional approaches was 36.89%. There were 22 articles investigating the effectiveness of specific courses, accounting for 20.39%.

Visualization network and in-depth full-text analysis revealed that significant improvement, qualitative progress, substantial gains, or positive enhancement were described as effective based on student achievement in 86.41% of all the included articles. As one of the predominant languages, online English learning received the most attention (82.52%), especially its effectiveness in English writing. Some useful assisted tools included LANGA, SW-PAL, DWright, VACLS, ANT, and VoIm, while the effective instructional approaches in online language learning included digital-game-based learning, online collaborative learning, online flipped writing, eTandem learning, and so forth.

3.3.1. Effectiveness Studies on Specific Courses in Online or Blended Language Learning

A total of 21 out of 103 articles were identified as effectiveness studies on specific courses in online or blended language learning, and 90.48% of studies focused on online English learning with English as the target language, including English writing, speaking, reading, translation, interpreting, grammar, English for Specific Purpose, and overall English learning. Except for American K-12 students, all of the students who were dedicated to learning a foreign language were from China, South Korea, Russia, Saudi Arabia, Iran, Turkey, and so forth. The majority of the studies reported an improvement in students' language proficiency and confirmed the effectiveness of online language learning, and three researchers had mixed attitudes toward the effectiveness of online learning, and only one study demonstrated the negative effects of learning German pronunciation online. Massive open online courses, known as MOOCs, were first developed by the University of Manibota by George Siemens and Stephen Downes [28], and it is widely advocated in the whole world now, which was also discussed. Detailed information about the 21 articles can be observed in Table 4.

Table 4. Overview of effectiveness studies on specific courses in online or blended language learning.

Language	Learning Content	Participants	General Outcome	References
German	Pronunciation	Undergraduates in the US	No significant improvement, negligible	[29]
Dutch	Overall Dutch learning	Adult immigrants in Flanders	Mixed	[30]
English	Writing	Undergraduates in Saudi Arabia	Effective, positive	[31]
		Undergraduates in China	Significant improvement	[32]
	Speaking	Undergraduates in Iran	Improvement and betterment	[33]
	Reading	Adults in Turkey	Positive mainly	[34]
		Undergraduates in Taiwan of China	Positive, enhancement	[35]

Table 4. *Cont.*

Language	Learning Content		Participants	General Outcome	References
	Writing and speaking		Undergraduates in South Korea	Improvement	[36]
	Listening and speaking		College students in Taiwan of China	Significant improvement	[37]
	Reading and writing		Undergraduates in Taiwan of China	Positive, significant	[38]
	Translation and interpreting		Adult learners in South Korea	General satisfaction, positive evaluation	[39]
	Grammar		Undergraduates in Saudi Arabia	Mixed	[40]
	Language and literature		K-12 students in the US	Mixed	[41]
	English for Specific Purpose	Hospitality English	Learners in Taiwan of China	Positive, helpful	[42]
		Agriculture and forestry English	Graduates in China	Effective, meaningful	[43]
		Maritime English	College students in China	Positive	[44]
	Overall English skills		College students in Russia and the United Arab Emirates	Effectiveness confirmed, significant difference	[45]
			MOOC learners in Iran	Efficient	[46]
			Undergraduates and postgraduates in China	Effectiveness recognized	[47]
			College students in Taiwan of China	Moderately high satisfaction	[48]
			Undergraduates in China	Positive enhancement	[49]

3.3.2. Effectiveness Studies on Assisted Tools in Online or Blended Language Learning

A total of 44 articles were identified as effectiveness studies on assisted tools in online or blended learning, among which 40 articles showed positive perceptions toward the assisted tools that were investigated in the experiment, accounting for 90.91%. Two articles showed negative perceptions, and two studies reported mixed attitudes toward the effectiveness of online tools, which accounted for 4.55%. Generally speaking, the target learning language was English, and the online tools aimed to assist students in learning English writing, vocabulary, grammar, collocations, listening, speaking, pronunciation, reading, interpreting, and overall skills. Table 5 shows other detailed information about the effectiveness studies on assisted tools.

Table 5. Overview of effectiveness studies on assisted tools in online or blended language learning.

Learning Content	Participants	Assisted Tools	General Outcome	References
Turkish	High school students in the US	Computer-assisted task-based language instruction (CATBI) tool	Mixed	[50]
Russian and Chinese	Junior high school students from Taiwan of China and Uzbekistan	Speech-to-text recognition system; computer-aided translation system	Positive	[51]
Croatian and English	College students in Australia, Croatia, Bosnia, and Hercegovina	Second Life, Skype	Positive gains	[52]

Table 5. *Cont.*

Learning Content	Participants	Assisted Tools	General Outcome	References
Spanish vocabulary	Native English learners	LANGA, an online game-based platform	Significant gains	[53]
Spanish punctuation	Learners in National University of Distance Education	Chatbot	Substantial improvement	[54]
Arabic sign knowledge	Arab deaf students	A new system consists of two subsystems: Speech to ArSL translation subsystem and ArSL to speech translation subsystem	Significant improvement	[55]
Sign language	Learners, including the deaf or hard of hearing	Sign language streaming videos and subtitles	Satisfaction	[56]
English writing	Graduate students in Taiwan of China	Computer-supported collaborative learning (CSCL) system	Improvement	[57]
	Undergraduates in Malaysia	Summary Writing-Pal (SW-PAL)	Significant improvement	[58]
	Undergraduates in Taiwan of China	DWright, an online writing tutorial system	Positive improvement	[59]
	Graduate students in Taiwan of China	EJP-Write, an online writing tutorial system	No significant improvements	[60]
	Undergraduates in China	Online automated essay evaluation system	Significant improvement	[61]
	Undergraduates in Japan	Online forums, blogs, and wikis.	Positive	[62]
	Undergraduates in Iran	Online blogs	Effective, satisfaction	[63]
	Postgraduates in Australia	Online corpora	Mixed	[64]
English vocabulary	Undergraduates in Taiwan of China	Adaptive business English self-learning system	Better performance, positive, effective	[65]
	College students in Hong Kong of China	Online corpus	Effective	[66]
	Undergraduates in China	Word Learning-CET6	Significant outperformance	[67]
	Junior high school students in Taiwan of China	Chinese and English e-gloss	Enhancement, useful	[68]
	Undergraduates in China	Memrise, technology-enhanced support with a focus on online resources	Beneficial impact	[69]
English collocation	Undergraduates in Turkey	Four online tools: Concordance website, Oxford Online Collocation Dictionary, World Wide Web corpus, Google Docs	Significantly better performance	[70]
	Undergraduates in Taiwan of China	Online video-assisted collocation learning system (VACLS)	Significant improvement, helpful, useful	[71]

Table 5. *Cont.*

Learning Content	Participants	Assisted Tools	General Outcome	References
English grammar	Undergraduates in Spain	Online corpus database	Effectiveness, satisfaction	[72]
	358 recruited students	Online tools: podcast, videocast, online tests, online glossary, and forums	Rather positive	[73]
English listening	College students in Spain	Audio News Trainer (ANT)	Effective	[74]
	Undergraduates in Taiwan of China	SynctoLearn, a fully automatic video and transcript synchronization tool	Positive	[75]
English speaking	Undergraduates in Asia	Voice over instant messaging (VoIM)	Effective enhancement	[76]
	Elementary school students in Taiwan of China	Web-based multimedia system	Significant outperformance	[77]
English public speaking	College students in Taiwan of China	Video-based blogs	Efficient, productive	[78]
English pronunciation	Undergraduates in Taiwan of China	23 online resources and 18 Apps	Less effective	[79]
	Language learners in Spain	Twitter	Beneficial effect, active engagement	[80]
English reading	Deaf high school students	Online bilingual multimedia English-ASL dictionary	Effective	[81]
	Grade 7 students at a junior high school in Taiwan of China	Digital reading annotation system	Significant improvement	[82]
English interpreting	Undergraduates in Hong Kong of China	Web-based library of interpreting practice resources	An effective role	[83]
	Interpreting students in different locations	Online Resources for Conference Interpreter Training (ORCIT)	Enhancement, useful	[84]
Overall English skills	English learners	Second Life, 3D virtual worlds	Relatively effective, more engagement	[85]
	Undergraduates in The Czech Republic	My EnglishLab	Better results	[86]
	Graduate students in Taiwan of China	Virtual English Classroom, VECAR	Improvement, promotion	[87]
	College students and teacher educators in Iran	37 online interaction tools	Effectiveness	[88]
	Elementary students in Korea	Massive multiplayer online role-playing game (MMORPG)	Useful, improvement	[89]
	Undergraduates in Taiwan of China	Online 3D VR English language learning platform	Positive affection	[90]
	College students in Taiwan of China	Wearable virtual reality language learning platform	Improvement	[91]
	English language users	Online discussion forum	Significant enhancement	[92]
Word production in multiple languages	2–6-year-old children	Sing and Speak 4 Kids (SS4Kids)	Significant improvement	[93]

3.3.3. Effectiveness Studies on Instructional Approaches in Online or Blended Language Learning

Thirty-eight articles were identified as effectiveness studies on instructional approaches among the 103 included articles, and English learning still received the most attention as the target language. Other languages included Chinese, German, Spanish, French, Italian, and Welsh. Positive outcomes accounted for 84.21%, and negative 2.6%. Researchers held mixed attitudes toward five instructional approaches, and three approaches were associated with online feedback. Among all the effectiveness studies on instructional approaches in online or blended learning, almost 30% of them paid attention to English writing, and the instructional approach included online academic writing tutors, automated online form of strategy instruction, online flipped writing, courseware-implemented task-based instruction, online indirect data-driven learning, computer-mediated collaborative writing, online film clip watching and writing, integration of online learner-centered blogging approach, and online corrective feedback. Qualitative progression or positive enhancement was confirmed with regard to the effectiveness of instructional approaches by nine scholars [94–102]. The other two studies showed mixed outcomes due to students' learning proficiency and the types of online corrective feedback [103,104]. Table 6 shows a detailed description of all 38 articles.

Table 6. Overview of effectiveness studies on instructional approach in online or blended language learning.

Learning Content	Participants	Instructional Approach	General Outcome	References
Chinese expressions	College students in the US	Game-based interactive learning online	Robust improvement	[105]
Chinese tone	Online learners	Visualization: five multimodal methods	Substantial benefits	[106]
Overall Chinese skills	Elementary students in Taiwan of China	Digital game-based learning (DGBL)	Significant enhancement	[107]
Spanish vocabulary	College students in the US	Synchronous Computer-Mediated Communication (SCMC): online corrective feedback	Effective	[108]
Chinese, French, German, Italian, Spanish, Welsh writing	Distance undergraduate learners	Online feedback alignment	Mixed	[109]
French and Spanish	Undergraduates in the UK	Computer-assisted language learning (CALL)	Mixed	[103]
English writing	English learners in Russia	Online academic writing tutor	Enhancement, value	[94]
	College students in Taiwan of China	Online feedback	Overall positive, but mixed	[110]
	College students in France	Online corrective feedback	Qualitative progress	[95]
	Undergraduates in South Africa	Computer-mediated feedback in the ESL-ODL context	Mixed	[104]
	College students in the US	Automated online form of strategy instruction	Significant gains	[96]
	Undergraduates in Taiwan of China	Online flipped writing	Positive enhancement	[97]
	College students in Taiwan of China	Courseware-implemented task-based instruction	Significantly better, great satisfaction	[98]

Table 6. *Cont.*

Learning Content	Participants	Instructional Approach	General Outcome	References
	Undergraduates in China	Online indirect data-driven learning	Greater effectiveness, practically meaningful	[99]
	College students in China	Computer-mediated collaborative writing (CMCW)	Higher gains, more benefits	[100]
	Undergraduates in Taiwan of China	Online film clip watching and writing	Clear improvement	[101]
	Undergraduates in Taiwan of China	Integration of online learner-centered blogging approach	Positive development	[102]
English speaking	Undergraduates in Taiwan of China	Mobile-supported peer assessment (M-PA)	Effective promotion	[111]
	Undergraduates in Taiwan of China	Online community-based flipped learning	Positive enhancement	[112]
English pronunciation	Undergraduates in Taiwan of China	Mobile-assisted pronunciation training (MAPT)	Significant improvement	[113]
English listening and speaking	Undergraduates in China	Blended learning mode	Obvious improvement	[114]
English translation	Learners at an e-learning college in China	Online peer video feedback	Effective improvement	[115]
English vocabulary	Secondary students in Vietnam	Online data-driven learning (DDL)	Significant increase	[116]
	Undergraduates in Japan	Computer-assisted language learning with spaced repetition	Significant gains	[117]
English collocation	Undergraduates in the Republic of Macedonia	Online corpus-based learning	Better results	[118]
English reading	Elementary students in Taiwan of China	Computer-assisted language learning (CALL)	Effective, promotion	[119]
	English learners in Iran	CALL: computer-assisted interactive reading model (CAIRM)	Significant improvement, positive perceptions	[120]
Overall English skills	College students	Content and language integrated learning approach (CLIL) in the virtual laboratory environment	More positive attitude, better outcomes	[121]
	Undergraduates in Hong Kong of China	Technology-assisted learning	Significantly greater effectiveness	[122]
	Undergraduates in China	Optimized blended learning model based on SPOC	Improvement	[123]
	Postgraduates in Taiwan of China	Learning style-based collaborative learning	Outperformance	[124]
	Graduate students in the US	Asynchronous computer-mediated communication (ACMC): online discussion forums	Effective	[125]
	College students from Korea, Japan, and Taiwan of China	Synchronous computer-mediated communication (SCMC): online chatting or discussion	Improvement, ceiling effect	[126]

Table 6. *Cont.*

Learning Content	Participants	Instructional Approach	General Outcome	References
	Persian English learners	Synchronous computer-mediated communication SCMC: online chatting	Effective, helpful	[127]
	Korean and English language learners	Pair work and group discussion in eTandem learning	Mixed	[128]
	English learners in Iran	Computer-assisted language learning (CALL)	Negative, insufficient	[129]
Overall foreign language skills	Language learners	Computer-assisted language learning (CALL)	Positive, satisfaction	[130]
	Undergraduates from France, Germany, Russia, Spain, and so on	Asynchronous computer-mediated communication (ACMC): weekly online threaded discussions	Positive, very beneficial	[131]

4. Discussion

4.1. Interpretations of Major Findings

4.1.1. Extensive Research Interest in Assisted Tools and Instructional Approaches

As for the status quo and research trends concerning the effectiveness of online or blended language learning, the current studies on this topic mainly focus on the effectiveness of assisted tools (42.72%), instructional approaches (36.89%), and specific courses (20.39%) in online or blended language learning. Ya-Ting C. Yang and Yu-Fen Yang are considered to be the most influential researchers. In terms of the major journals, *Computer Assisted Language Learning* is the major research publication for those studies concerning the effectiveness of online language learning. In addition, the top five journals that publish most of the included articles are *Computer Assisted Language Learning*, *Recall*, *Interactive Learning Environments*, *Computers Education*, and *Educational Technology Society*. *Sustainability* ranks eighth with four articles. According to the visualization analysis based on CiteSpace, the research hotspot is the effectiveness of instructional approaches, such as collaborative learning, feedback, and assisted tools, such as blogs, which is consistent with the in-depth full-text analysis of all the articles. To be more accurate, the number of studies on assisted tools is more than that on instructional approaches with six articles.

The results of this study indicate that the number of articles with regard to the effectiveness of online or blended language learning has increased drastically since 2020, the year of the outbreak of COVID-19. The number of articles related to this topic is also expected to increase in 2022, confirming that the pandemic has influenced the education mode significantly, and effective ways to implement online learning against the background of COVID-19 are continuously being explored so as to enhance teaching quality and students' learning effectiveness. Students' online learning experience and academic achievements were indeed influenced during the COVID-19 pandemic, which is in agreement with the findings of the research carried out by Omar [2].

4.1.2. Lack of Adequate Cooperation among Research Institutions

One unanticipated finding is that there is inadequate cooperation among various research institutions in this field. The top three contributing research institutions are all from China—National Cheng Kung University, Lunghwa University of Science and Technology, and The University of Hong Kong—indicating that China is also one of the leading countries. Nonetheless, all the nodes in Figure 8 locate randomly without showing obvious connections, and only the nodes between Alzahra University and Iran University of Science and Technology can be traced. Even in Taiwan of China, where most of the studies in this field were conducted, fewer links can be seen between research institutions. National Central University seems to cooperate with other institutions more frequently,

but the number of collaborations is also rather limited. Therefore, it is fair to say that there is an obvious lack of collaboration between research institutions when investigating the effectiveness of online language learning.

4.1.3. Dominant Position of Online English Learning

Another pivotal finding is the dominant position of English as the target learning language that is investigated. Among all the keywords presented in Figure 3 based on CiteSpace, English is the only language that appears in the figure, which is in line with the in-depth analysis. As one of the dominant languages in the world, English attracts the most attention from scholars who are dedicated to studying effectiveness in online or blended language learning, with a proportion of 82.52%. Almost all aspects of English learning were investigated, such as English writing, listening, speaking, reading, grammar, vocabulary, translation, and interpreting. English writing was the most popular learning content that was investigated with regard to effectiveness studies on online or blended learning. Varieties of assisted tools and instructional approaches were applied to English writing online courses so as to enhance the students' writing performance. Not only did students learn English the most online, but also the researchers focused on the effectiveness of learning English the most online. Despite the fact that other minor languages were also investigated, such as Dutch, Turkish, Croatian, Welsh, and so on, effectiveness studies on learning those languages online still account for a small proportion.

4.1.4. Various Methods Combined to Measure Effectiveness

A thorough analysis of 103 included articles revealed that the research methodology of effectiveness studies on online or blended learning usually combined qualitative and quantitative approaches and employed mixed methods to collect data, including quasi-experimental design, interviews between teachers and students, semi-structured interviews between educators and language program providers, cross-sectional learning satisfaction surveys, questionnaires, self-reflection, transcripts of interactions, observation, peer and instructor feedback, and so forth, which guarantees the quality and credibility of the data in the experiment. The employment of questionnaires and semi-structured interviews to collect data was frequently mentioned when the researchers aspired to learn about the true perceptions of both teachers and students toward specific courses, assisted tools, or instructional approaches. However, it is worth mentioning that the reliability and validity of various items in the questionnaires must be tested for the purpose of guaranteeing the accuracy of measuring effectiveness and further analysis [47]. Moreover, the questionnaires were usually administered at least two times at the beginning of the online language learning and the end of learning, depending on the research subjects as well as the data collected.

4.2. Theoretical and Practical Implications

4.2.1. Theoretical Implications

One of the most significant contributions of this study is to confirm the validation of CiteSpace in terms of tracking the research trends or hotspots in certain fields. In this study, one of the purposes of using CiteSpace was to judge the possible research focus regarding studies on the effectiveness of online or blended language learning. Besides the utilization of CiteSpace, a comprehensive, in-depth analysis of the research focus of all the 103 articles was made, which contributed to dividing the 103 articles into three types, namely, the effectiveness of assisted tools (42.72%), instructional approaches (36.89%), and specific courses (20.39%). After comparing the major findings of CiteSpace and those of the full-text analysis, it was found that they correspond to each other. For one thing, the results of the in-depth analysis are consistent with the research focus on the effectiveness of instructional approaches based on Figures 3–6. In Figure 3, one of the most notable nodes is "computer-mediated communication." In Figure 4, the co-occurrent keywords with "language" are as follows: "feedback, data-driven learning, computer-interactive reading,

collaborative learning, computer-assisted language learning," and so on. In Figure 5, "instruction, collaborative learning, computer-assisted language learning, and computer-mediated communication" are listed. In Figure 6, the second cluster is "flipped instruction," the third cluster is "interactive learning," and the sixth cluster is "collaborative learning." Hence, it is believed that the major findings of the comprehensive full-text analysis are compatible with the analysis of the research focus based on all of the nodes, keywords, and clusters aforementioned in Figures 3–6. For another, the research focus on the effectiveness of assisted tools is consistent with the major findings of the top 11 clusters in Figure 6 based on CiteSpace, which include the fifth cluster of "dictionary" and the eighth cluster of "audio news trainer." The investigation into assisted tools is also compatible with the top 25 keywords with the strongest citation burst in Figure 5, such as "computer, blog, technology," and so forth. Likewise, the same is also true for the research focus on the effectiveness of specific courses. Therefore, it is fair to say that this study contributes to the validation of the use of CiteSpace to track research trends and hotspots.

Another significant theoretical implication is that the real proportion of each research focus by comprehensive full-text analysis is not in line with the proportion of the research focus judged by the nodes, keywords with the citation burst, and clusters provided by CiteSpace. For instance, in accordance with Figures 3–6, most of the research is connected with instructional approaches because they account for a larger proportion in terms of keywords or clusters. However, the studies concerning the effectiveness of instructional approaches account for 36.89% based on the findings of the full-text analysis, with a gap of 5.89%. The inconsistency may be attributed to the limited quantity of the articles collected in this study or the principle of categorization. Provided that more articles are included, the proportion of each research focus based on CiteSpace might be more accurate.

A comparison of the findings with those of other studies confirms the general effectiveness of online language learning, which is also consistent with that of Zou [47], who concluded that only 0.47% of participants considered online language learning ineffective or extremely ineffective, which means 99.53% of the participants recognized the effectiveness of online learning. However, the major findings of this study are different from those of the research conducted by Martin [29], who held that the pronunciation skills of German learners did not improve significantly after having courses the whole semester. In contrast to this study, the effect sizes for those distance German pronunciation learners are negligible primarily due to the lack of classroom interaction, less production of spoken German, and less feedback about their communications through German. As for the reasons for the discrepancy between the major findings of the two studies, the language type should be taken into account. The majority of the target languages that were analyzed were English, which is slightly different from German. Online English pronunciation learning might be suitable for distance learners, but those distance German learners may find it ineffective to learn it online, German pronunciation in particular. Another possible reason is whether the learners accepted target pronunciation training, which was not clarified by the researchers in most of the included articles.

4.2.2. Practical Implications

This study provides new insight into the most effective ways to implement language courses online. When it comes to the effectiveness based on students' achievement or learners' perception, 89 out of 103 articles reported positive outcome, with descriptions of robust improvement, significant enhancement, positive gains, confirmed effectiveness, high satisfaction, better achievement, substantial outperformance, and so on. Only four articles demonstrated insignificant achievement or negative perceptions of the effectiveness. In addition, 9.71% of the studies revealed mixed perceptions toward the effectiveness investigated due to learners' language proficiency, identity, or other factors. Some assisted tools were deemed rather effective: LANGA for learning Spanish vocabulary, ANT for learning English listening, SW-PAL for learning English writing, Memrise for learning English vocabulary, VACLS for learning English collocations, Twitter for learning English

pronunciation, and ORCIT for learning English interpreting. Online game-based interactive learning, online corrective feedback, online flipped writing, mobile-assisted pronunciation training, eTandem learning, and online collaborative learning were all effective instructional approaches to online language learning.

The advantages of learning a language online were acknowledged. The affordance, flexibility, convenient retrieval, and interaction observations of MOOCs were highly praised by hospitality English learners because information about the subject can be retrieved anytime, anywhere, without disappearing [42]. Spatial and temporal convenience, self-paced learning, and one-to-one feedback were considered the major advantages of online learning when trainees learn English translation and interpreting online. They were generally satisfied with the blended mode and more satisfied with online translation learning than interpreting. According to over half of trainees' evaluations, online translation classes are as effective as traditional learning in classrooms [39]. Generally speaking, online language learning has exerted a significant positive influence on students' competence in various kinds of language skills. In all the 103 included articles, participants included undergraduates, postgraduates, adult learners, elementary school students, junior high school students, deaf students, or students with disabilities. They came from a large number of countries, including China, the United States, the United Kingdom, Russia, France, Saudi Arabia, Malaysia, Japan, Turkey, Spain, Australia, Croatia, the Czech Republic, and so on.

In addition, this study probed into the factors that may negatively affect the effectiveness of online language learning; firstly, from the perspective of online language learners, their identity, and their proficiency level matter. Among all the 17 researchers who investigated the effectiveness of specific courses, 3 of them argued that the effectiveness of online language learning depends on students' identity. The online courses with project-based assignments and higher-level knowledge activities were not helpful to credit-recovery students, but they tended to improve noncredit-recovery students' learning outcomes, who logged in more frequently and stayed logged in for longer [41]. There were some negative beliefs about online Dutch learning, and some participants in the interview held that online Dutch learning was only suitable for those students with high proficiency levels. For those with low literacy, they were unable to learn online. The constraints on the effectiveness of online language learning include resources as well as technical and pedagogical support [30]. Secondly, when it comes to teaching methods, target training is of paramount significance. Classroom interaction and feedback are important for online pronunciation learners, without which their skills are slow to improve, which can be observed from the comparison of purely online learning and its combination with innovative Cued Pronunciation Reading (iCPRs) [29]. Even though students obtained substantial gains through online language learning, those who followed the standard curriculum without targeted pronunciation training still do not show obvious improvement, which further testifies to the significance of the target training when students learn a language online. Thirdly, in terms of the same learning content, the specific learning aspects also make a difference in the effectiveness of learning a language online. The effectiveness of learning online English grammar for Saudi undergraduates was mixed, depending on grammar structures. Online English grammar learning "seems to have no or little effect" on the achievement of learners of limited language levels when they learned simple grammar structures, such as a simple sentence. Instead, when they learned complex sentences and compound sentences, online learning was more functional because they could deduce English sentence patterns from samples of the language they had mastered [40] (p. 334).

Despite mounting evidence of the positive influence of learning a language online, there are still some problems and challenges that teachers and students have to confront. One of the key challenges for teachers is to keep up with increasingly evolving technologies. The workload of online language teaching is much more than that of traditional learning in classrooms, which puts a heavier burden on teachers and makes them reluctant to incorporate new technologies into their classrooms. Moreover, the expensive infrastructures are also a prerequisite for course designers. It is reported that teachers lack sufficient formal

training about the advantages of technology, and some teachers even have no relevant prior experience, especially senior teachers. Therefore, technology literacy for teachers is a crucial skill that should be taken into serious account before designing online language courses. As for students, lack of interaction and engagement in online language learning contributes to most of the dissatisfaction. It is a widely held view that the atmosphere of sitting before a computer is completely different from the atmosphere in the classroom, and it is easy for those students with less self-control to be distracted by other things. Limited access to technologies and Internet connections also poses greater challenges to students who need to learn online due to COVID-19 or other constraints. Adequate technical and pedagogical help must be provided by institutional policymakers and administrators.

4.3. Future Research Directions

After analyzing the interpretations of the major findings and theoretical as well as practical implications, it is believed that despite these promising results, several questions remain unanswered at present.

To begin with, future studies should focus more on online minor language learning due to the currently excessive interest in online English learning. Although the effectiveness of learning English online has been thoroughly investigated, the effectiveness of learning a minor language online is also of great significance. The most targeted language of studies on online language learning is English, and a large multitude of researchers have devoted themselves to learning activities in English writing, reading, speaking, vocabulary, grammar, translation, and so on. Figure 4 further testifies to this proposition, and it was found that the keyword "language" is associated with English more frequently than other languages. Although Arab is presented in Figure 4, the node size is far smaller than English, which indicates that English is still the research hotspot among all the languages. As a matter of fact, the effectiveness of learning other minor languages online also deserves attention; therefore, for future studies, the effectiveness of learning other minor languages, such as French, German, Spanish, Turkish, and so on, which have seldom been paid attention to, should be carried out. Future research is also required to establish whether the type of language is a factor in the effectiveness of online language learning. Provided that the assisted tools and instructional approaches are the same, will the effectiveness then be different when students learn different languages online?

Furthermore, studies concerning the most effective assisted tools for learning English writing online should be conducted. Online English writing has received much more attention from scholars, and the effectiveness of numerous assisted tools has been analyzed. However, there is no comparison of the effectiveness among varieties of tools. The most effective tools in this field are still unknown. The CSCL system, SW-PAL, DWright, online automated essay evaluation system, online forums, blogs, and wikis, as well as online corpora, are all considered to be effective assisted tools in online or blended English writing courses. The factors affecting the effectiveness of assisted tools for learning English writing online should be explored. Only one tool showed no significant improvement, that is, EJP-Write, an online writing tutorial system. The results of 25 graduate students who aspired to enhance their English academic writing skills indicated that the improvements were not significant, and the tools could not completely meet their anticipations primarily due to the Chinese-interfaced system. The students could not read Mandarin Chinese, and they could not use the tool directly and easily because of language barriers [60]. Compared with EJP-Write, another online writing tutorial system, DWright, was incorporated into blended courses successfully, and the system served as an effective mediating tool to provide English writing learners, especially EFL undergraduates, with sufficient practice, helping the students to enhance their English writing. In further studies, researchers should carry out studies on identifying the most effective courses, assisted tools, or instructional approaches for each language skill in online learning under the guidance of mathematical statistics so as to provide a reference for students and teachers to implement online language learning more efficiently.

In addition, more cooperation should be established among different research institutions. At present, the majority of studies were carried out in Taiwan of China, where abundant research results have been made. Nonetheless, inadequate cooperation leads to the simplicity of participants who learn a language online. The results might not be applied to those students who learn a language online in other parts of the world, and the practical implications may be limited to only a small number of participants. Due to the dispersion of online or distance learners' locations, it is feasible to include participants from other regions of the world. More cooperation will also be strengthened among research institutions in this way.

Finally, in this study, the proportion of each research focus based on CiteSpace was found to be inconsistent with the proportion of that through comprehensive full-text analysis, which might result from the limited number of included articles. As for further studies, more included articles, such as at least 500, should be included in order to certify the proportion of research focus between the findings of CiteSpace and in-depth analysis.

5. Conclusions

In this study, 103 empirical studies from the SSCI were systematically summarized for the purpose of mapping existing studies concerning the effectiveness of online or blended language learning.

The extensive research interest in assisted tools (42.72%), as well as instructional approaches (36.89%), and the lack of adequate cooperation among research institutions in this field were confirmed. English was deemed the dominant language in this field, and various methods to measure the effectiveness of online language learning more scientifically were analyzed. As for theoretical contributions, this study affirmed the validation of the utilization of CiteSpace in terms of tracking research trends or hotspots. However, the proportion of each research focus judged by CiteSpace was not consistent with that of comprehensive full-text analysis. The comparison of the findings also certified the major findings and interpretation of them in other studies. When it comes to practical contributions, the effective ways to implement online language courses, the advantages of learning a language online, the factors that negatively affect the effectiveness of online language learning, and the problems and challenges that teachers and students have to confront were discussed in detail.

This study leaves several avenues for future research. Online minor language learning should be paid adequate attention to, and its effectiveness also matters. Studies concerning the comparison of the effectiveness of all the assisted tools in one specific class, such as English writing, should be carried out in order to obtain the most effective assisted tools. Research institutions can cooperate more with those in other parts of the world to conduct cross-region research so as to obtain statistics of some other participants across the world, especially those learners of online or distance learning. More articles should be included to testify the proportion of each research focus based on CiteSpace.

The generalizability of the results is limited by the sample size because only a limited number of language learning was investigated, whereas there are large multitudes of languages in this world. Although the effectiveness of learning some languages online is confirmed, such as English, Chinese, Russian, and Spanish, there are still many languages left to be explored. The major limitations of this study also lie in the categorization of all the included studies. Some studies combined both assisted tools and instructional approaches, and it was rather challenging to distinguish one major theme from another. Some researchers assessed the effectiveness of specific courses based on one particular assisted tool and one particular instructional method, which also made it difficult to categorize their studies.

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