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The Eclectic Approach in English Language Teaching Applications: A Qualitative Synthesis of the Literature

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Abstract: This paper proposes a study of the methodologies used to teach English as a second language through computer applications. It reviews the different methodologies used in language teaching in order to contrast them with different fundamental approaches. It examines the applications used for teaching English online, especially those in line with personalised learning environments and learner-centred autonomy. The use of a mixed methodology is reported, allowing the selection of papers from both a traditional systematic review and the search engine elicit.org. Finally, it is concluded that Blended Learning is the most appropriate method, highlighting that current applications are mainly based on the Audio-Lingual method, which limits their practical use in wider contexts. Further research is needed on software applications that prioritise personalised learning environments with learner-centred autonomy, incorporating technologies based on Blended Learning and artificial intelligence (AI). To this end, it is proposed in the future to develop an application using Automatic Speech Recognition (ASR), Text To Speech (TTS), Natural Language Understanding (NLU) and Dialog Management (DM) algorithms, focusing on the above and simulating the capabilities of a teacher. This may lead to innovations in the development of software applications capable of integrating different methods, teaching modalities and learning methods.

Keywords: blended method; eclectic approach; contrasting methods; English language; teaching application

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1. Introduction

This paper aims to introduce the eclectic approach as a viable solution for teaching English as a second language. It delves into the diverse methodologies and approaches discussed in the following sections. Additionally, a concise overview of the models utilised in English language teaching is provided.

The traditional teaching model has been face-to-face between a teacher and their students [1–5]. This is common in language teaching, including English as a second language. To reinforce this model, research has been promoted from universities, institutes and academies with the aim of achieving new approaches, methods, techniques and strategies that make the teaching–learning of English systematic, meaningful and effective [6–8].

The advancement of technology has changed the traditional teaching–learning model, which has even been replaced by modern approaches [9]. The traditional face-to-face teaching model prevailed in the 1970s, 1980s and 1990s, where the teacher was the central axis in the classroom. However, since the end of the 1990s and up to the present day, the role of the teacher in the classroom has shifted, allowing the role to be maintained in the same classroom or from another location. This model, provided by virtual classrooms, keeps the teacher at the centre but remotely.

In the 21st century, with the expansion of the digital age and the strengthening of the Internet, among other factors, the teacher has been displaced from the centre of teaching. Today, it can be said that it is no longer only teachers who teach. In almost all fields of

education, applications are being developed to support learning. Especially for the teaching of English as a second language, a large number of applications can now be found that enable the learning of the language.

For reading, writing, speaking and listening, which represent the four skills of English language teaching and learning [8], the applications present different activities that are not necessarily oriented to make the English teaching–learning process effective. The innovative nature of today's English language teaching–learning apps does not imply that the teaching–learning process is efficient. Focusing on the teacher, the ideal characteristics that make the teaching–learning process effective are having a broad knowledge of the language, being organised and explaining the content well and giving timely clarifications or arousing and maintaining the interest of the learners, among others [10,11].

No matter the ideal characteristics a teacher possesses, speaking and listening skills are often the most challenging for students to acquire [12–15]. This difficulty can be attributed to various factors, with a lack of confidence and shyness being particularly prominent according to an extensive literature review [8,12].

When it comes to computer applications, teaching speaking and listening skills can also be challenging. To understand this difficulty from the perspective of the applications, it is crucial to consider that learners need to engage in real-time conversations with an interlocutor who can comprehend their speech and provide appropriate responses. However, current apps are designed to address limitations such as time constraints faced by teachers, while also aiming to enhance learners' confidence and motivation and reduce their shyness [16–19]. Nevertheless, during app development, limitations [17,20,21] persist in terms of dialogue diversity and timely responses. This often results in repetitive dialogues and even meaningless responses, thereby hindering the effectiveness of the teaching and learning process. Other limitations can be discovered by reviewing the references presented in this paper.

As a result, several studies, including the one conducted by [22], highlight the reasons why students show more interest in courses involving human interaction. Even for chatbots, which are highly advanced applications for human-like interaction, the limitations for English language teaching and learning are acknowledged in [23]. Presently, the development of computer applications presents significant challenges in enabling effective human–machine interaction. This entails considering the subtleties of language when generating responses and providing feedback that is as realistic as possible. The aim is to facilitate more open and unrestricted conversations, rather than being confined to specific domains or contexts.

In order to overcome these challenges, it is not only necessary to innovate in the field of applications but also to find approaches that propose methods, techniques, strategies, activities and tasks that are integrated when developing these applications. This will enable effective speaking and listening practice in the teaching and learning of English. These approaches must be able to be integrated with emerging technologies developed around AI. Using AI, applications that emulate a human's ability to perform tasks and make decisions can be created [24–27].

In this case, AI supports the learning of English, but it can be equally applied to the learning of any other language, or even other subjects. AI encompasses linguistic, numerical or practical intelligence. This can be provided by NLU or neural networks, among others. At the level of subject study, it allows students to acquire knowledge that is adapted to their level and, at the same time, to improve their self-regulation or control processes, in order to achieve better learning results [28–35].

This research is interested in the study of the approaches and methodologies that have been used for the teaching–learning of English. Specifically, the study aims to evaluate the methods used for the teaching of the English language in order to understand them and to establish the method that can be best adapted to the teaching of the language through a computer application with learner-centred autonomy. The selected method

should facilitate effective practice of speaking and listening skills in a wide-ranging context for future development. To this end, the following tasks are proposed:

- To contrast traditional methodologies vs. emerging or modern methodologies used in the teaching–learning of English in order to understand and synthesise a methodological approach that is best suited to the development of applications for the practice of oral expression and listening comprehension.
- To investigate whether the apps developed for English language teaching implement any particular methodology in order to assess their effectiveness in the teaching–learning process. This study includes the exploration of applications developed with AI technology.

With all the information gathered and analysed, the aim is to carry out a broad discussion to select the methodology that best suits the English language teaching–learning process by means of a computer application with integrated AI.

In the future, the selected methodology could be evaluated in a computer application, which has yet to be developed. This application would assess the effectiveness of speaking and listening comprehension, as well as evaluate the presented methodology and potential technological integration.

The following research questions are proposed:

- Q1: Will there be a significant advancement in language teaching through computer applications?
- Q2: Are there current methods that can guide language teaching through learner-centred computer applications?
- Q3: Are there current technologies that can enable the development of software applications that simulate the language teaching qualities of a human teacher?

The remainder of this paper is structured as follows. The methodology that guided this research is presented at the end of Section 2. In Section 3, some of the most important language teaching methods and fundamental approaches are described and contrasted on the basis of the eclectic methodology. The paradigms of language teaching in online environments, its relationship to personalised learning environments and the Blended Learning approach are presented. AI technologies and application development are also discussed. Ending this section, the analysis of the results of the study is presented. Also, a broad discussion is presented based on the analysis, answering the research questions posed, and the method that should guide future research is proposed. Finally, the conclusions and future work are presented in Section 4.

2. Materials and Methods

The documentary research presented in this paper was conducted by reviewing journal articles, scientific conference proceedings and books obtained from reputable databases, such as IEEE Xplore (https://ieeexplore.ieee.org/Xplore/home.jsp, accessed on 28 July 2023), Semantic Scholar (https://www.semanticscholar.org/, accessed on 28 July 2023), Scopus (https://www.scopus.com/, accessed on 28 July 2023) and Google Scholar (https://scholar.google.es/, accessed on 28 July 2023). Additionally, the complementary search engine elicit.org (https://elicit.org/, accessed on 28 July 2023) was used to retrieve further relevant documents. Furthermore, certain applications and technologies mentioned in this paper were thoroughly examined and tested. These resources offer official online platforms where they can be evaluated in basic mode or accessed through repositories available for implementation and testing.

The systematic literature review encompasses three main stages: the initial selection of relevant articles, a meticulous review involving information extraction and article inclusion and the comprehensive coding and analysis of the gathered data.

2.1. Selection of Articles

As previously mentioned, the resources were retrieved for selection through two channels. The first channel involved using the databases mentioned earlier. The second channel employed the search engine elicit.org (https://elicit.org/). In both cases, the initial criterion was to retrieve the following documents:

- Journal articles and conference papers: Only resources that have been accepted and considered relevant to the topic of this research are selected. Moreover, these resources undergo a thorough peer review process and are presented in the English language.
- Books: Resources that directly relate to the subject of this scientific investigation were selected.
- Software applications and technologies: Priority was given to those extensively documented in recent publications and with official online platforms where they can be tested in a basic mode or accessed through repositories for quick implementation and basic testing.

The retrieval of documents was guided by the research topic and the research questions formulated at the end of the Introduction. This study focuses on selecting a method that can be seamlessly integrated into a computer application for English language teaching, with an emphasis on fostering student autonomy. With the mentioned theme in mind, the research objectives are to review and contrast various methods and approaches to English language instruction.

Given the goal of choosing a method suitable for integration into a computer application tailored for autonomous English learning, conducting a thorough review of language teaching, particularly through computer applications, becomes imperative. The scope of the literature review encompasses computer applications developed using cutting-edge AI technologies. The preliminary review process has also yielded some valuable documents.

Based on the considerations above, a carefully designed initial search string was employed to retrieve documents containing information on both traditional and modern methods and approaches to English language teaching, leveraging emerging technologies and innovative language instruction paradigms. The first constructed search string is provided below:

> *(English language teaching OR teach English OR teach English AI) AND (second language OR learn languages OR language learning AI) AND (English methods OR learn English method OR teaching English methods OR teach English approach)*

Based on the search string, an initial retrieval of 476, 23,400, 1 and 460 articles occurred from the databases IEEE Xplore (https://ieeexplore.ieee.org/Xplore/home.jsp), Semantic Scholar (https://www.semanticscholar.org/), Scopus (https://www.scopus.com/) and Google Scholar (https://scholar.google.es/), respectively. To narrow down the results, specific inclusion and exclusion criteria were applied.

In the case of IEEE Xplore (https://ieeexplore.ieee.org/Xplore/home.jsp), the search was refined to focus on articles and books, yielding 18 and 1 documents, respectively. Due to the substantial number of articles retrieved in Semantic Scholar (https://www.semanticscholar.org/), the search was further refined to concentrate on education, linguistics and computer science, while only selecting articles published from the year 2000 onward, resulting in 106 relevant documents related to language teaching, English language instruction and eLearning and software for education. Using the same search string for Scopus (https://www.scopus.com/), only 1 article was retrieved. In the case of Google Scholar (https://scholar.google.es/), only articles were included, leading to a total of 23 retrieved documents.

A second search string was formulated to gather documents that specifically address language teaching through applications, with a particular emphasis on promoting student autonomy. The constructed search string is as follows:

(language teaching applications OR English teaching applications OR language teaching technologies OR English teaching technologies OR language teaching) AND (computer applications) AND (student-centered OR autonomy)

In the second search string, initially, 30, 4710, 41 and 1470 articles were retrieved from the databases IEEE Xplore (https://ieeexplore.ieee.org/Xplore/home.jsp), Semantic Scholar (https://www.semanticscholar.org/), Scopus (https://www.scopus.com/) and Google Scholar (https://scholar.google.es/), respectively. To refine the results and manage the quantity, certain inclusion and exclusion criteria were applied. Regarding IEEE Xplore (https://ieeexplore.ieee.org/Xplore/home.jsp), only the single retrieved article is included. For Semantic Scholar (https://www.semanticscholar.org/), the search was narrowed down to the first 5 years to handle the large number of retrieved documents, resulting in 1910 articles. Despite efforts to apply filters, the search improvement in this database was limited; therefore, the documents' retrieval is confined to the first pages, resulting in the review of an approximate total of 20 articles in the end. For Scopus (https://www.scopus.com/), using the same search string, only 12 documents were retrieved by applying the filter for articles and setting the search range to the last 10 years. As for Semantic Scholar (https://www.semanticscholar.org/), only articles were filtered for, resulting in 43 retrieved documents.

Table 1 presents the previously mentioned quantities. Column 1 lists the databases used to retrieve the documents, while columns 2 and 4 show the documents retrieved by the first and second search strings without inclusion criteria, respectively. Columns 3 and 5 show the documents retrieved by the first and second search string considering inclusion criteria. Column 6 shows the total number of documents retrieved, which are then analysed for inclusion.

Table 1. Article retrieval by different search engines.

Search Engine	1st Search String 1	Final 1st Search	2nd Search String 2	Final 2nd Search	Total
IEEE Xplore (https://ieeexplore.ieee.org/Xplore/home.jsp)	476	18	30	1	19
Semantic Scholar (https://www.semanticscholar.org/)	23,400	106	4710	20	126
Scopus (https://www.scopus.com/)	1	1	41	12	13
Google Scholar (https://scholar.google.es/)	460	23	1470	43	66
elicit.org (https://elicit.org/)	-	-	-	-	110

As mentioned at the beginning of this subsection, the process of reference selection also involved the use of the search engine elicit.org (https://elicit.org/), which has the capability to retrieve documents based on specific questions. Depending on the topic under investigation, each question must be crafted to refine the results. Questions are built using keywords related to the research topic and the research questions.

In Table 2, the questions crafted for querying elicit.org (https://elicit.org/) and the keywords that generated them are presented. The retrieved documents are then sorted by year, considering only those related to the research subject and published from the year 2000 onward.

The document retrieval through this method is more specific, with around 10 documents per question needing review for inclusion, leading to an approximate total of 110 documents. The last row of Table 1 provides the summary by the search engine. Overall, 334 documents were retrieved and subsequently analysed for inclusion. The process of refining the questions presents a limitation in the methodology described using elicit.org; however, it has proven effective in retrieving relevant documents. The notable feature of

elicit.org (https://elicit.org/) lies in its ability to upload external references in PDF format, facilitating automatic analysis and information extraction through question-based queries or activated filters. These functionalities showcase how elicit.org (https://elicit.org/) significantly enhances the documentary research workflow by streamlining the process of information gathering and analysis.

Table 2. Questions used to carry out the search in Elicit.

Elicit Question	Subject Keyword
What is the history of English teaching methods?	history of English language teaching
How to teach English?	teach English
What are the methods to teach English?	methods to teach English
What are the most effective methods to teach English online?	methods to teach English online
What is the current state of technology implementation of language learning with AI?	language learning AI
How can AI be applied to teach English?	teach English AI
What AI applications exist to learn languages?	applications to learn languages
Is there an AI chatbot that can provide meaningful personalised content to language learners?	personalised content to language learners
What is the most effective method for beginners to learn to speak English?	effective method to learn to speak English
What is the difference between methods and approaches for teaching English?	difference between methods and approaches
What are the approaches to teach English?	teach English approach

2.2. Review, Extraction of Information and Inclusion of Articles

The initial stage of this methodology is focused on document retrieval, with no implication that all retrieved documents would be included in the study. To determine the inclusion of a document, the process begins by examining its abstract. This step allows us to classify it as "relevant" or discard it. Moreover, during this step, the source of the article is reviewed to verify its reliability, presence of a DOI (Digital Object Identifier), peer-reviewed status for publication and accessibility in PDF format for reading. If the document meets these criteria, it retains its "relevant" classification, and further scrutiny is carried out to extract useful information for the research. Otherwise, the document is definitively discarded.

The application of exclusion criteria resulted in the removal of a substantial number of documents. For instance, many of them did not align with the study's objectives, leading to their exclusion during the initial assessment based on their abstracts. Additionally, some documents duplicated information or presented studies already covered, prompting their exclusion as well. Moreover, several documents originated from bulletins or conference proceedings and solely provided abstracts, making their inclusion challenging. Furthermore, certain documents were deemed unreliable sources or lacked a DOI, and their peer-review status could not be verified. Concerning books, some were discarded due to either their age or containing studies similar to those already included.

This review process allows the inclusion of a total of 29 documents. Additionally, 30 other documents related to the 29 retrieved or cited documents are reviewed and included. An additional set of 27 documents, retrieved at the beginning of the research, aided in focusing on the study's topic and research questions. With this substantial number of documents, a preliminary synthesis of approaches, presented in Table 3 of Section 3.1, and a preliminary contrast, discussed in Section 3.2, were developed.

The preliminary work gains greater substance with the addition of new references. The review process for publishing this article ultimately includes 8 new documents. Appendix A Table A3 presents the reference numbers of the included documents in column

1, while columns 5 and 6 indicate whether the documents have a DOI and have undergone a peer review process, respectively. Column 7 specifies the source from which each document was sourced. Figure 1 offers an overview of the included documents categorised by their sources. After a thorough review of all available materials, a total of 94 references were selected for inclusion in this research, excluding websites.

Table 3. Synthesis of the fundamental approaches and their objective.

Communicative	Develop effective communication skills in real-life situations, focusing on the meaningful and fluent use of language.
Competency	Develop speaking, listening, reading and writing skills without neglecting grammatical knowledge and vocabulary.
Contextualisation	Develop speaking, listening, reading and writing skills immersed in authentic contexts.
Content	Develop language skills through the use of authentic material relating new knowledge to previous experiences and knowledge.
Audio-Lingual	Develop skills in language use based on repetition and memorisation of linguistic patterns through oral practice.
Task	Develop communication skills through practical and meaningful tasks, simulating authentic situations.

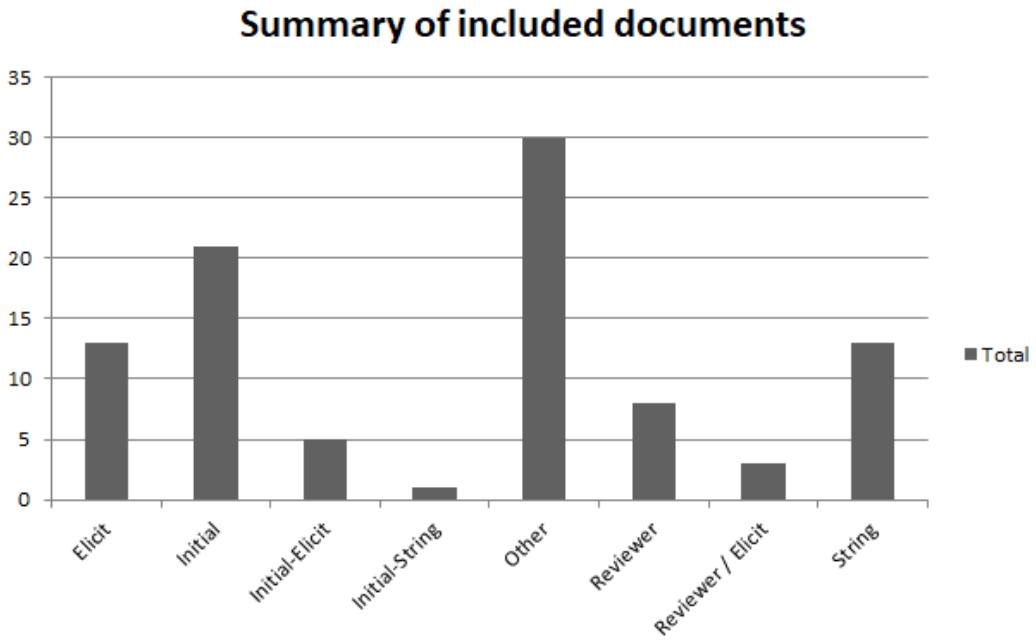

Figure 1. Documents obtained from the search process.

2.3. Coding and Data Analysis

Thoroughly examining a relevant document requires seeking information directly related to the study's topic and research questions. This approach facilitates the extraction of crucial findings. The gathered information allowed for the fine-tuning of the synthesis of approaches presented in Table 3 of Section 3.1, the comparison of methods in Section 3.2, the analyses conducted in Sections 3.3 and 3.4 and the provision of answers to the research questions in Section 3.5.

To address the research questions, we conducted an analysis of the retrieved documents, extracting information that could suggest, infer or interpret relevant insights related to the research inquiries. If a document directly addresses a research question, it is coded as "yes" or "yes, suggests". If a research question is indirectly addressed, it is coded as

"inferred" or "interpreted". For example, if a document discusses language teaching using artificial intelligence technologies without explicitly stating the development of a language teaching software application, the reviewer may infer or interpret that an AI-based application for teaching English will be developed in the future. They may also infer or interpret that there will be significant progress in language teaching.

It is important to note that numerous cases were reviewed in the various examined documents. If the analysis of a document does not align with any research question, it is coded as "does not suggest", "does not infer" or "does not interpret". A "no" is assigned when the document does not relate to any of the research questions.

We must emphasise that this response arises from the data analysis, and its interpretation is subjective. The analysis process is conducted twice: Initially, one reviewer analyses a document and provides responses to the questions based on the extracted information. Subsequently, a second reviewer cross-checks the results by rereading the document and answering the same questions. When the responses from both reviewers do not align, they engage in a negotiation process.

The encoded responses to each research question are presented in columns 2, 3 and 4 of Appendix A Table A3.

A thorough analysis of the data revealed that only a few documents directly address the research questions. This observation is evident in Figures 2–4 when comparing the number of "yes" responses to the number of "no" responses for each research question.

The analysis of Figures 2 and 3 also indicates that some documents suggest a positive response to RQ1 and RQ2. However, none of the documents offer a favourable response to RQ3. Upon reading certain documents, it is possible to infer or interpret positive responses to the research questions. It is essential to highlight that this interpretation is derived from all the documents listed in Appendix A Table A3.

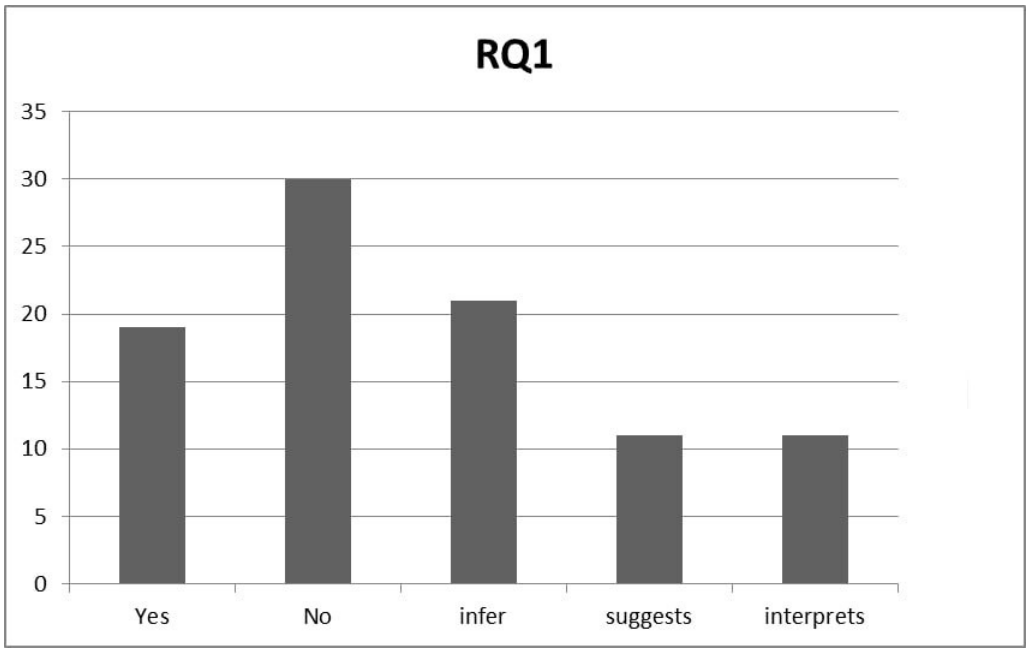

Figure 2. Results for RQ1.

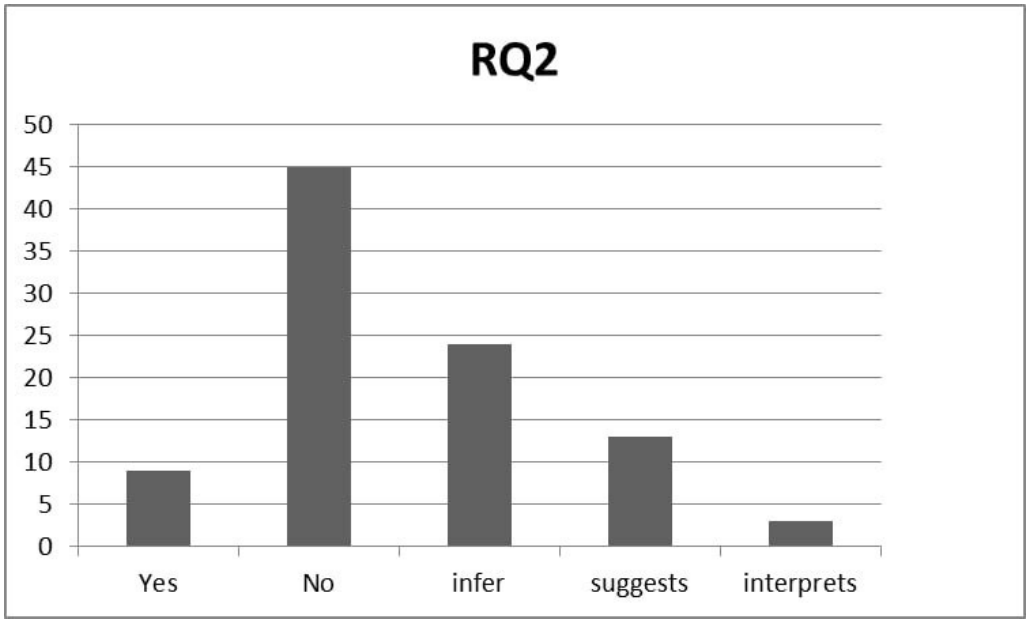

Figure 3. Results for RQ2.

A more thorough interpretation can be accomplished by combining certain forms of favourable responses with the "no" category. For example, a greater number of documents address RQ1 and RQ2 in some capacity. However, this is not the case for RQ3, as depicted in Figure 5. It is important to emphasise that the examination encompasses all the documents listed in Appendix A Table A3.

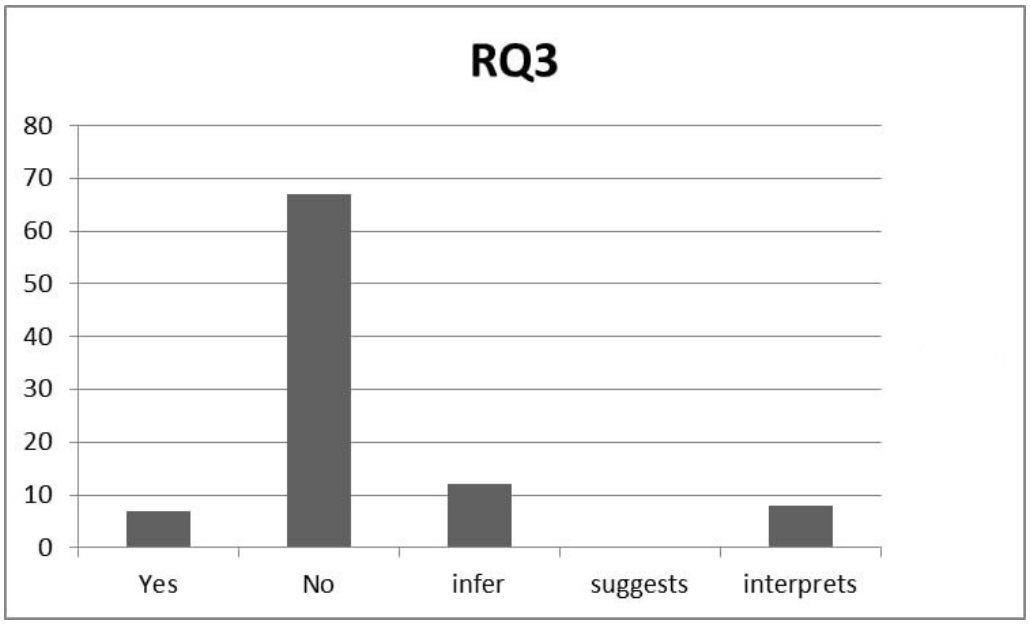

Figure 4. Results for RQ3.

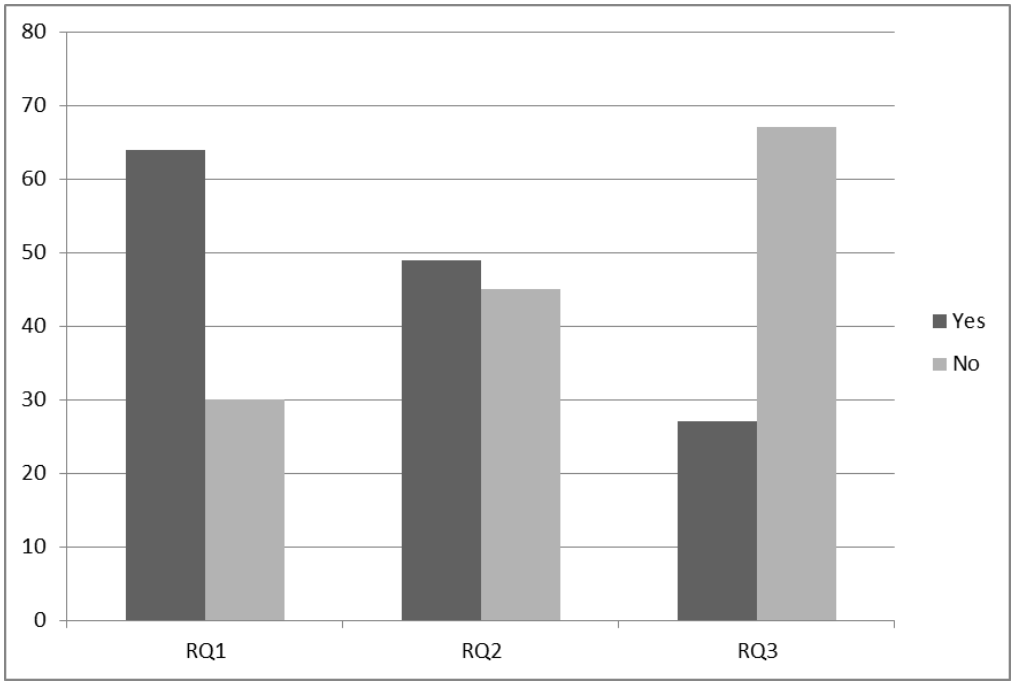

Figure 5. Results for all documents.

If the same analysis is performed, grouping only the documents retained through the selection made via Elicit, the search string and other sources, an identical pattern can be observed in Figure 6. This confirms that the exclusion of the initially selected documents and the addition of documents by the reviewers do not impact the results. The interpretation of these findings enables the provision of answers to the research questions in Section 3.5.

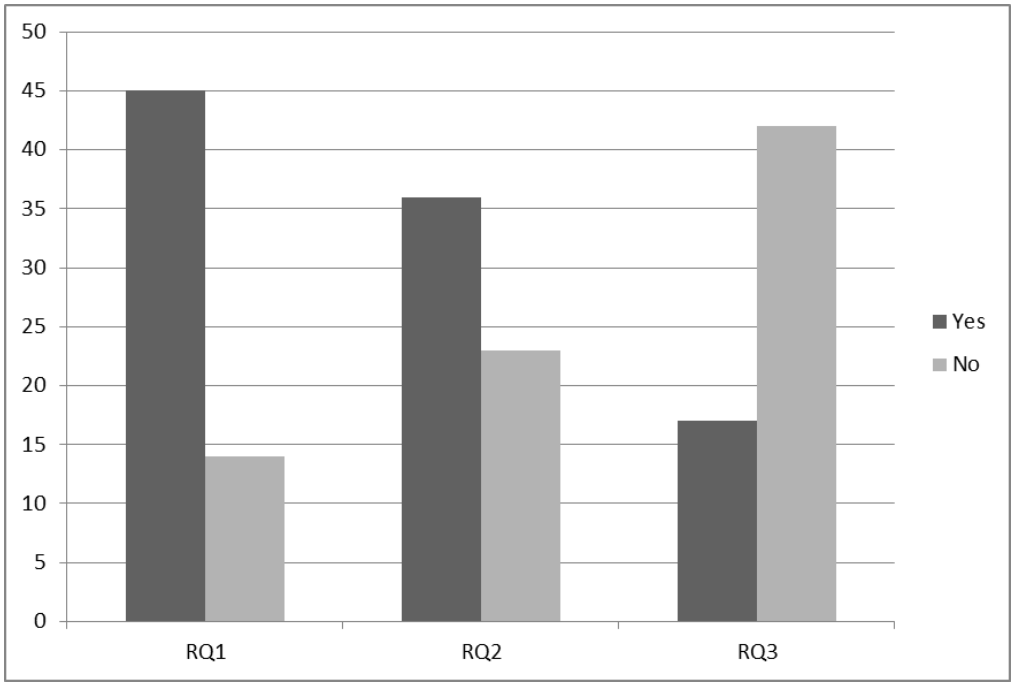

Figure 6. Documents retrieved by Elicit, string, reviewer string and others.

3. Results and Discussions

3.1. English Language Teaching Methods

An extensive review of both traditional and modern methods of teaching English reveals an ongoing quest in this field to discover faster and more effective ways for in-

dividuals to develop their communication skills. Historically, these methods have been changing [36] to adapt to the demands of the times. The methods are based on approaches that draw on linguistic and pedagogical research, as well as the accumulated experience of the language teacher's practice [37–41].

Several authors argue that the teaching and learning of a foreign language is a complex process, which necessitates an effective methodology. In turn, the method must be based on an approach [38–41] conceived from the fundamental axioms or general principles that govern the teaching–learning of a language [38–41]. Because of the adaptability and fluidity of the English language [9], an eclectic approach to teaching and learning is suggested [9,42]. This eclectic approach should evidently be shaped by fundamental approaches (or axioms), adopting from each one its advantages and objectives in language teaching–learning [38]. It can be understood that the eclectic approach encompasses various methods, and a single method can be employed within multiple approaches [43].

On the use of computers to apply methods in English language and/or other language teaching, it can be observed that it is indeed beneficial for the acquisition of English language learning, as it allows to use this potential and also to join classical methods. This provides a more solid and higher-quality knowledge by taking advantage of both fields [44].

At this point, it is important to clarify the concepts; a distinction should be made between approach and method. In this sense, in [38], an approach is defined as a set of beliefs and principles used as a basis for teaching a language. Furthermore, in [43], the authors indicate that an approach gives guidance on the theoretical basis of language teaching–learning, providing a broad conceptual framework for that purpose [38,43,45]. On the other hand, both [38,43] consider a method as a set of procedures utilised in practical teaching and learning tasks, offering guidance through techniques, strategies and activities. This research explores methods and approaches for English language teaching, aiming to select one that can be integrated into a computer application. The findings could potentially be applied to other languages in the future.

Now, following the proposal of this paper and based on the work of [9,42] on the eclectic approach, this study focuses on traditional and modern methods for teaching English through a computer application. It is important to remark that a computer application limited to oral and aural practice should enable the objectives set by the approach adopted to be achieved. In accordance with the extensive literature reviewed, a synthesis of some fundamental approaches and their intrinsic objectives is presented in Table 3.

Some of the methods for English language teaching–learning adopt the name of the fundamental approach, e.g., the communicative language teaching approach [38,42,46]. In Table 3, this approach is synthesised as the Communicative approach. Other methods may adopt more than one approach, e.g., content and language integrated learning [38,42], which is related to the Content approach, the Communicative approach, the Competence approach and the Contextualisation approach. All the approaches are summarised in Table 3, presenting the essentials of each and giving a clear idea of how any language skill can be developed.

The aim of this study is to focus on a method that enables English language teaching and learning with a focus on speaking and listening. In the following, the more speaking- and listening-oriented methods will be contrasted with the fundamental approaches shown in Table 3. The contrast is based on the perspective of the eclectic approach. This allows the methods to be analysed by looking at their practice not from a single approach but from several fundamental approaches. A method is sought that captures the essence of each approach so that it can guide the development of an effective computer application in language teaching.

3.2. Contrast: Methods and Fundamental Approaches

As mentioned earlier, some methods are rooted in a specific fundamental approach that guides their principles, while others incorporate multiple fundamental approaches.

However, the purpose of this subsection is to examine these methods from an eclectic perspective.

The communicative language teaching method, which is primarily based on the Communicative approach [38], focuses on authentic communication and emphasises fluency rather than accuracy. However, it is important to note that this method also aims to facilitate learner interaction within meaningful contexts, promoting practical application. Upon closer analysis, it becomes evident that the teacher assumes a guiding role by facilitating, correcting and even providing materials to be used in various contexts [9,38,43,47]. These aspects suggest that this method can be seen from the perspective of the Content approach. According to the contrast made, the method also relies on the Contextualisation and on the Content approaches.

The content and language integrated language method [38] is based on the Content approach because it makes use of authentic materials related to nonlanguage subjects such as science, history and mathematics, among others. This modern and interesting method is widely implemented in educational systems today. From the perspective of the Competency approach, content and language integrated learning develops the four pillars of the language teaching–learning process while also emphasising vocabulary acquisition [48]. Students are encouraged to expand their vocabulary through the study of various non-English subjects. Additionally, content and language integrated learning can be viewed from the Communicative approach, as it allows for interaction between teachers and learners within a realistic educational context [38,49]. This aspect also aligns with the Contextualisation approach [38]. Further analysis of the educational context, including the roles of teachers and students, reveals that Practice and Feedback [38] is a fundamental approach targeted by content and language integrated learning, but this approach is not covered in this study. According to the comparison made, the method is also based on the Competency approach, on the Communicative approach and on the Contextualisation approach.

Whole language [38], as a method underpinned by the Contextualisation approach, introduces the idea that language is a complex and natural system and can be learned through activities that integrate language in useful and functional contexts [50,51], such as reading books, watching films, exchanging and discussing ideas or constructing stories with an emphasis on experience. For the purposes of this study, an in-depth analysis of this method shows that language as a whole must combine speaking and listening practice with useful and functional contexts based on experience and prior knowledge [38,50,51]. According to the contrast carried out, the method is also based on the Content approach and on the Audio-Lingual approach.

Competency-based language teaching [38] is a modern method that emphasises the practice and use of the four language skills [52]. It focuses on engaging learners in concrete language tasks such as reading books, writing emails and interacting with people in real-life situations (speaking and listening). The works in [38,52] highlight that this method aims to develop practical communicative skills and language competencies necessary for effective interaction in authentic contexts. It is evident that language use or "usability" is also considered a competency. This method has become a standard in the Common European Framework, allowing teachers to design appropriate curricula and materials tailored to learners needs and objectives and to assess their progress and achievements. In practice, this method ultimately aims to enable learners to achieve proficiency in speaking, listening, reading and writing, as well as fluency, clear and coherent expression and accurate understanding and analysis of information in any context. The aforementioned aspects suggest that this method draws upon various approaches.

Task-based language teaching [38,53] is based on the Communicative approach and on the Task approach. It focuses on the development of speaking and listening comprehension through specific tasks. With a Constructivist approach [38,42], this method enables learners to engage in interactions that simulate real-life situations within a specific context. This method encourages learners to take an active role and promotes problem-solving in practice.

A comprehensive analysis of the method reveals that its connection to the Communicative approach facilitates the practical development of speaking and listening comprehension through task solving. It also incorporates elements of linguistic competence by applying basic language structures (grammar and vocabulary) to solve simulated situations, such as trips or job interviews. By adapting the simulated tasks to the needs and interests of learners, this method is in line with the Adaptive approach, which is not discussed in this paper. According to the comparison made, the method is also based on the Competency approach and on the Contextualisation approach.

Finally, the Audio-Lingual method [38,54] is analysed. This method, which is based on the Communicative approach, enables the development of speaking and listening comprehension of words and phrases through repetitive exercises and pattern practice. The broad analysis of this method allows to connect it with the Practice and Feedback approach and with the Competency approach, as it is possible to expand vocabulary in this way. It is important to note that this method, although it does not emphasise the systematic understanding of content (context) and language structure (grammar) [43], is used by many computer applications for language teaching, and even variants such as the audio–text method are used [55]. Therefore, according to the analysis carried out, this method is also related to the Competency approach.

Other methods can be analysed, but the analysis of these six methods discussed from an eclectic point of view in contrast to the synthesised fundamental approaches demonstrates that language teaching and learning is not limited to a specific method. Taking into account the individual needs, interests and learning styles of each student, there is a need for a method that can adapt and evolve, incorporating the strengths of each fundamental approach and other methods to meet the needs of modern learners. In Figure 7, the relationship between the methods and approaches discussed in this study is shown. Note that the methods are represented by rectangles and the approaches are represented by ellipses. Thick arrows represent direct method–approach relationships, while thin arrows show the method–approach relationships inferred through contrast.

In Section 3.3.2, the Blended Learning approach, which conforms to the above principles, is presented.

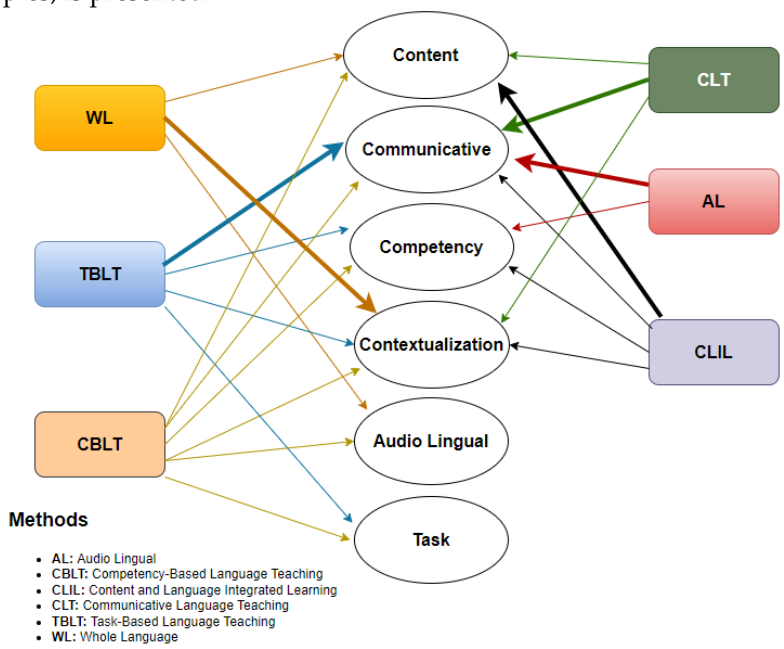

Figure 7. Relationship diagram between methods and the fundamental approaches provided in Table 3. The methods are represented by rectangles and the fundamental approaches are represented by ellipses. Thick arrows represent direct method–approach relationships, while thin arrows show method–approach relationships inferred through contrast.

3.3. Paradigms for Teaching Language Learning in Online Environments

The paradigms of teaching and learning in online environments encompass a novel collection of theories, approaches, methods, techniques, strategies and other forms utilised in online instruction [56,57]. Online teaching, in its various forms, such as e-learning, distance education and virtual education, introduces a new way of delivering education without contradicting traditional teaching methods [56]. Extending this notion to the field of language teaching, it can be concluded that online instruction, in any of its formats, represents a fresh approach to language education, including the teaching of English.

This new way of teaching, or these new teaching paradigms, have emerged as a result of various circumstances. When considering the circumstances of language learners, it can be understood that the current generation is distinct, as they are described as "multitasking, fully immersed in technology, visual-oriented, fast-paced, and digital", according to the work in [48]. This makes necessary to find new ways of teaching English. It should be noted that the discussion does not revolve around teaching English in educational institutions, where students may be coerced by the family environment to submit to the teaching–learning process but may lack motivation to learn. In contrast, the focus is on individuals who are highly motivated to adopt English as a second language. This motivation may stem from business, pleasure or any other context that inspires learners to seek efficient and innovative methods for language acquisition. The idea is to provide a viable opportunity to study English through a computer application that must be available at any time and in any place. Therefore, an application to learn English online is proposed, in addition to guaranteeing adequate teaching. For this, it must be designed based on a method discussed in this work.

3.3.1. Online Learning and Personalised Learning Environments

Online learning can take place at any time and in any place [17,58]. Various synonyms have been attributed to online learning, such as e-learning and distance learning. All these terms share similar characteristics but also have their well-specified differences. Many of these differences can be understood in [56,58]. However, and in line with the study presented in this paper, online learning can be defined as the process of acquiring knowledge, skills or competences through the Internet by means of a computer application [59].

The most widely used computer applications for online learning are the following: learning platforms such as Duolingo [60] and Busuu [61], video conferencing tools such as Zoom [62] or Skype [63], English language exchange sites such as Tandem [64], online tutors such as Verbling [65], channels such as YouTube where complete prerecorded courses can be found, websites with different educational resources, different language learning communities on social networks such as Facebook, chats such as Whatsapp [66] and virtual classrooms using platforms such as Blackboard [67] or Moodle [68]. In [17], a detailed analysis of the strengths, weaknesses, opportunities and challenges of many of these applications can be found.

In online learning, the teacher is not necessarily excluded from the teaching–learning process [58,69]. In fact, many applications are used by the teacher as part of the strategies in the teaching–learning process [36,69,70], with the difference that there is no face-to-face teacher–student interaction. While [17] provides a comprehensive comparison of face-to-face and online learning, this study focuses on applications that allow students to learn English without requiring teacher supervision or tutoring. A computer application that does not require tutoring or supervision by a teacher must be designed within a personalised learning environment. These environments are computer platforms that can be adapted to the individual needs of each learner, allowing them to progress at their own pace, focusing on one or several pillars of language learning, allowing for individualised feedback [71–74]. It is difficult for an application in the online learning approach without teacher supervision to fully replace face-to-face learning [17]. However, online learning has the potential to enhance language teaching practices and offer exciting possibilities due to the availability of various technological tools [73]. With the resolution

of technical and implementation issues, the development of new pedagogical practices that prioritise learner-centred autonomy becomes possible [71,74,75]. Undoubtedly, this autonomy should empower students to set their own learning objectives, manage the content they study based on their needs, assess their progress and receive timely feedback. In this regard, personalised learning environments play a crucial role in the development of any application with learner-centred autonomy.

Pedagogical problems must also be addressed [17,48,56] since many applications currently developed under the approach of personalised learning environments allow effective learning of grammar and vocabulary but do not achieve language development in a broad sense of contextualisation [72]. This problem demotivates the learner, because it does not allow students to express themselves clearly and coherently nor to understand and analyse information accurately in any context.

Leaving aside technical and implementation issues for future work, it is important to address the remaining pedagogical problems in applications developed under the approach of personalised learning environments. In order to assess these issues, Duolingo [60] and Busuu [61] were analysed. While these commercial applications are interesting and offer opportunities to learn grammar and vocabulary through various text- and audio-based activities, they lack in-depth contextualisation. To support this claim, one can refer to [55], which highlights that the activities in these applications are primarily based on the image–audio–text method, where concepts are associated to images, audio or text. In case of a mistake, the application provides repetition of the activity until the learner gets it right. By comparison, it can be understood that the Audio-Lingual method presented at the end of Section 3.2 works in the same way, developing listening and speaking skills through repetitive exercises. In [38,43,54], one can read the advantages of this method and also its major disadvantages. One of them is the inability to develop higher-order thinking skills, which is necessary to achieve the linguistic competence usability. Section 3.4 discusses the term usability and the importance of taking this competence into account when developing a software application.

Based on all the information analysed at present, the problems are centred on autonomy. This is because much of the development is innovation-driven and lacks a coherent approach. It is likely that empirical development is driving these developments in that direction, but they are not translating into really effective implementation in terms of English language teaching and learning.

3.3.2. Online Learning and the Blended Learning Approach

In the previous Section 3.3.1, the main applications that can enable online English language teaching and learning are presented, making clear that this study is directed towards applications focused on learner autonomy. Personalised learning environments are also discussed, which refers to the applications or platforms designed to adapt to the needs of learners based on their autonomy. To achieve the effective development of such applications, and based on the discussions presented in Section 3.2 regarding the eclectic approach, a comprehensive approach that combines multiple fundamental approaches is necessary. This involves blending the strengths of traditional methods with modern approaches, thereby leveraging the advantages of both face-to-face and online learning experiences. After a thorough review of the extensive literature, it is evident that the Blended Learning approach [69,76–79] is best suited for this purpose. This approach seamlessly integrates traditional teaching methods with online instruction, utilising available technologies [76,77]. Flexibility, access to a diversity of resources, the opportunity to personalise learning, ubiquitous accessibility of resources, incorporation of technologies such as AI, gamification of activities and feedback and availability, among others, are the advantages that the Blended Learning approach can enable [69,76,77,80].

The Blended Learning approach should be implemented through interactive, inspiring, fun and challenging activities in an innovative, creative and learner-interest context [77,81]. Under the eclectic approach, the Blended Learning approach must be able

to make available a series of positive faculties of a tutor, such as meaningful and motivating teaching, willingness to teach, valuing the learning process, feedback in teaching, diversification of contexts, learning by competence and being communicative, among others. These characteristics are reflected in the intrinsic objectives of the fundamental approaches, which an ideal eclectic method should reflect. These idealised faculties, in practice, can be implemented in a computer application using the Blended Learning method if the available technologies are appropriately selected, especially emerging technologies driven by AI.

3.3.3. AI Technologies and Application Development

In the first chapter of the book in [24], AI is defined from several perspectives. Simply put, AI can be described as the capability of a machine to perform tasks that are typically associated with human intelligence, enabling it to solve complex problems or make decisions that were previously limited to human abilities [24,26]. In essence, the machine must possess human-like intelligence, including the ability to perceive its surrounding environment, learn from that environment and use that knowledge to solve specific problems and even reason about them.

As a result, AI has evolved into a multidisciplinary field where various areas of knowledge converge [24]. AI is built on a foundation of many other concepts that are also discussed in [24]. In summary, it can be concluded that AI is primarily based on machine learning, which focuses on developing algorithms that enable machines to learn from data without explicit programming [24]. Additionally, it relies on neural networks, which are mathematical models inspired by the functioning of the human brain, where structures are designed to learn specific behaviours by adjusting weights during information processing [24].

AI can also be defined as the integration of algorithms designed with the purpose of creating software with human-like reasoning abilities. Nowadays, many computer applications incorporate software developed using AI technology, such as smartphones, virtual assistants like Alexa (https://developer.amazon.com/alexa) or Siri (https://www.apple.com/siri/), predictive text used in ChatGPT (https://chat.openai.com/) and Google (https://www.google.com/), among other examples.

Related to this work, computer applications used for language teaching can also be mentioned, as many of them already incorporate artificial intelligence technologies as of today. However, in this study, we are interested in selecting a language teaching method to be integrated into the development of an online computer application focused on student-centred autonomy. To achieve this, AI technology plays an important role, since any development in this direction must incorporate robust computational algorithms that allow the integration of qualities similar to those of a human teacher. This implementation should accurately simulate a language tutor and endow it with intelligence to genuinely interact with the student.

The computer application, in practice, must be capable of listening and understanding the learner. It should also be able to engage in interactive communication within a broad context, beyond merely presenting grammar and vocabulary content. Furthermore, it should motivate the learner and assess their progress to adapt the content according to their individual needs, among other functionalities [82]. In a comprehensive study by [83], the use of technology in English language teaching is explored, highlighting the reasons and advantages of incorporating it in modern teaching methods as opposed to traditional approaches.

In order to conduct a more comprehensive exploration of computer applications for language teaching, three research questions were formulated at the conclusion of the introduction. The objective was to gain insights into the development of computer applications for language teaching, the existing proposals and the research conducted in this dynamic domain. Moreover, the study aimed to investigate their association with emerging technologies such as AI. Information extraction was carried out on all the reviewed references, and the results are presented in Appendix A, Table A3. The interpretation of these findings is provided in Section 3.5 in response to the research questions.

Among the available technologies for application development, those centred around AI are particularly relevant in terms of the capabilities a computer application should possess. Review of the available technologies confirms that many methods, techniques and algorithms provided by AI have been chosen for the development of applications in the field of English language teaching [26,55,84,85].

Based on a comprehensive analysis of various documents, including [28,86–96], it is evident that there is a wide range of AI tools, methods, techniques and algorithms available for the development of language learning applications. Considering the development of an online computer application with learner-centred autonomy, the following algorithms should be carefully selected from AI technologies:

- Algorithms for Automatic Speech Recognition (ASR).
- Algorithms for Natural Language Understanding (NLU).
- Algorithms for Text To Speech (TTS).
- Algorithms for the selection of responses according to human intention or Dialog Management (DM).
- Other algorithms.

Figure 8 shows a general diagram of what a web application designed for language teaching would look like, integrating these algorithms and any others that may be necessary for its autonomous operation. The technical underpinnings of these algorithms can be found in general terms in [24]. However, this research is more interested in selecting tools or algorithms already proven in a specific field of ASR, NLU or DM and any other algorithms that allow the development of an English language teaching application.

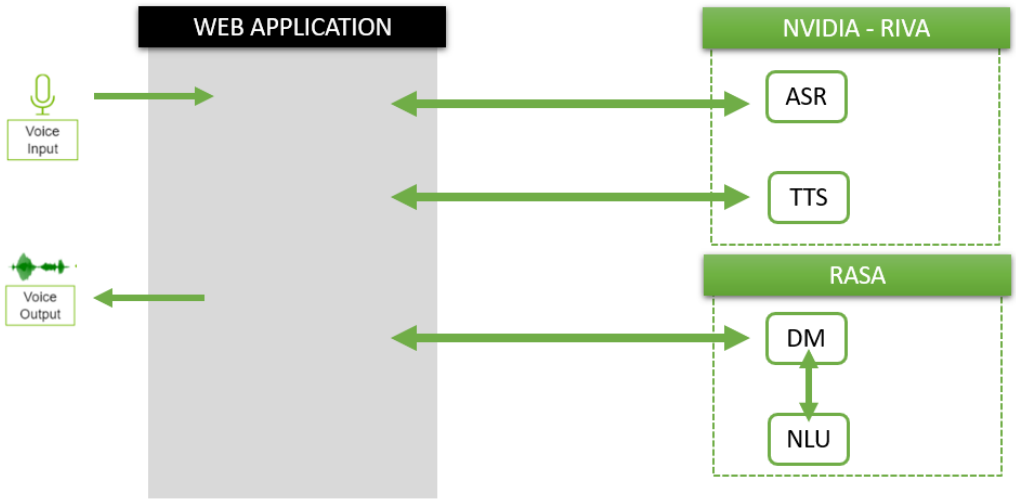

Figure 8. Diagram of a web application for English language teaching with algorithm integration.

When discussing the selection of proven technologies, reference is made to packaged technologies as frameworks that can be easily implemented or integrated into the development of an English language teaching application. Some commercially available frameworks, such as Nvidia Riva [97], include ASR and TTS algorithms. Frameworks like RASA [98] also include algorithms for NLU and DM, capable of selecting responses based on the user's intent. These frameworks provide efficient and reliable solutions for incorporating these technologies into the application. The development of a fully automated language teaching system will most likely involve the use of other algorithms. The utilisation of additional algorithms is highly probable in the development of a completely automated language learning application.

The aforementioned technologies are accompanied by easily accessible repositories. Although the current research does not encompass technical development, both repositories were downloaded and subjected to initial testing in a basic mode. In future endeavours,

this research will expand into the technical domain to develop a complete application based on the methodology chosen in this study. To achieve this goal, a thorough evaluation of the technologies mentioned in this subsection, as well as others, is conducted to identify those that fulfil the requirements in terms of the specified algorithms. Additionally, other criteria such as open-source availability, ease of integration, flexibility and scalability are considered during the selection process.

3.4. Final Analysis of Results

As it is emphasised throughout this paper, the teaching of second languages across all its pillars (reading, writing, speaking and listening) is not a trivial process. This is especially true because individuals aspiring to acquire a second language aim to do so comprehensively. In other words, they seek meaningful learning that enables them to use the language effectively in various contexts. Consequently, as discussed in this study, language usability is regarded as an additional competency, alongside the four pillars of language teaching. Based on this, it can be concluded that language usability represents the primary objective pursued by individuals seeking to adopt a second language, regardless of their specific needs.

Teaching usability is also a challenging task for teachers. It is the reason why numerous methods have been developed and evolved over time. The bibliographic research conducted in this study has helped to understand that all these methods have originated from fundamental approaches, which establish intrinsic objectives related to the pillars of teaching. It is important to highlight that, as presented in Table 3 and discussed in Section 3.2, each method addresses the challenge of fostering effective communication skills within a specific context. However, upon conducting this analysis, it is evident that no method satisfactorily meets an individual's aspirations for developing their ability to communicate in a second language communication abilities. This conclusion is evident when considering the multitude of methods that are subject to studies, such as the one undertaken in this research.

Furthermore, this research has uncovered evidence of approaches that aim for more ambitious methods, such as eclectic approaches, in order to achieve not only proficiency in the four pillars but also to prioritise what it is considered the main pillar: the usability of a language as a paramount competency. It is important to remark that this competence, usability, is the most difficult to adopt. Evidence of this difficulty was also found throughout this research and is presented in the various studies referenced, both for usability and for the other pillars of teaching. The reasons why it is difficult to teach a language, and the particular case of English, are also referenced in this study, highlighting the teacher's willingness to teach and the student's shyness and lack of time.

It is important to highlight that the documents reviewed and analysed in Appendix A Table A1 do not explicitly mention the term "usability" in the keywords, as indicated in column 4 of the table. For this reason, the documents that were discovered were uploaded to the search engine elicit.org (https://elicit.org/), and the question "What was the use of the language?" was posed. Both the question and the corresponding matches can be found in column 3 of Appendix A Table A2. Through the analysis and interpretation of the matches found in the provided references in the search engine, one can see that the use of language is manifested in various aspects discussed in the papers based on the identified matches. Upon contrasting the matches with the reading of abstracts and select sections of the reviewed papers, it can be inferred that the term "use of language" is closely associated with language learning, active participation in the meaning-making process, communication, problem solving and question formulation. Specifically, the English language is emphasised as a focal point for both learning and teaching. The matches highlight the significance of self-expression, critical thinking and the evaluation of language materials and tasks. Moreover, the use of language is explored within the context of Blended Learning, linguistic analysis and natural language processing. Overall, the matches align with the findings derived from an analytical reading, leading to the conclusion that the use of language

is intricately connected to the development of effective communication skills, enabling individuals to express themselves, comprehend others and interact proficiently with the world around them.

The challenges associated with language instruction have prompted the emergence of online teaching, taking advantage of the technological advancements of the current era. This has allowed teachers to be present everywhere, albeit at the expense of face-to-face teacher–student interactions. However, it has also empowered students to become more active participants in their own learning. Furthermore, as technology has progressed, language teaching options have emerged that exclude the teacher from the language teaching–learning process. This has paved the way for the computer applications described in this paper.

As was effectively demonstrated, these computer applications are employed by teachers for language instruction. However, the current landscape and the utilisation of emerging technologies like AI necessitate the development of customise applications that prioritise student autonomy, while also being accessible anytime and anywhere. This paper also presents evidence of such applications, but it references ongoing research where the current issues posed by these applications are discussed, with a lack of contextualisation being highlighted as the primary problem that undeniably impacts usability.

This documentary research confirms an advance in the way languages are taught today, going from face-to-face teaching where the teacher actively teaches to applications that in theory do not require teacher tutoring. According to the documents reviewed, in practice, there is still a long way to go to achieve an application that simulates the skills and qualities of a teacher.

3.5. Response to Research Questions

In this section, the research questions posed in the Introduction are addressed. The responses for each question are derived from the analysis, systematic extraction of pertinent information and interpretation of the results presented in Appendix A Table A3.

Regarding the first research question, "Will there be a significant advancement in language teaching through computer applications?", the majority of reviewed documents do not directly address this question. However, an affirmative answer can be provided based on the presence of numerous documents that discuss or develop computer applications for language teaching, explicitly mentioning their benefits in language education. Additionally, some studies explore technologies applicable to language teaching, which can be inferred to be tested through computer applications, leading to a substantial advancement in language education through these means.

Some of the references directly discussing computer applications for language teaching include [16,20,22,41,55,70], among others. On the other hand, some references that utilise or propose technologies for language teaching, such as AI, virtual reality, voice recognition and NLU, include the works of [28,53,56,59,78,79,82,91,96].

It is crucial to acknowledge that the first research question is framed in the future tense, and the findings lead us to interpret that there will indeed be a substantial advancement in language teaching through computer applications. However, it is of utmost importance to emphasise that these applications should be developed with a comprehensive methodological approach that integrates both technical aspects and fundamental principles of English teaching and learning.

Consequently, the Blended Learning approach, coupled with emerging AI-based technologies, is recommended as a pivotal solution to address methodological and technical challenges effectively and to create a highly efficient language learning application. By combining these approaches, the strengths of both traditional teaching methodologies and cutting-edge AI advancements are harnessed, ensuring a robust and impactful language education platform.

For the second research question, "Are there current methods that can guide language teaching through learner-centred computer applications?", the answer leans slightly

towards being affirmative. No document directly addresses this question. While some documents, like [90], discuss the topic of autonomy or student-centred teaching, they do not propose any specific methods. Several documents explore online teaching, e-learning or language teaching applications involving the creation of chatbots or other computer applications and web-based tools, which could imply a student-centred approach. Additionally, some of these documents discuss methods such as Audio-Lingual or Blended Learning that can be utilised to develop applications centred around student autonomy. However, it is important to note that none of the reviewed documents explicitly present current methods specifically tailored to guide language teaching through student-centred computer applications.

Based on the review conducted in this study, it can be inferred that current language teaching methods predominantly revolve around in-person or online teaching, often placing a strong emphasis on the role of tutors or supervisors. However, many computer applications claiming to prioritise student autonomy lack comprehensive contextualisation in terms of usability. These applications tend to focus primarily on aspects of teaching related to reading and writing while neglecting other crucial language skills.

In light of these findings, the Blended Learning approach described in Section 3.3.2 emerges as a promising solution to address these limitations. By leveraging the Blended Learning approach, there is potential to create student-centred computer applications that effectively teach students the necessary language skills for enhanced usability. This ambitious goal can be achieved by integrating traditional teaching methods with technology-based learning, providing a well-rounded and comprehensive language education experience for students.

However, it is important to note that the applications and language teaching paradigms reviewed in Section 3.3 do not offer substantial evidence to suggest that the discussed methods and approaches are capable of effectively addressing the development of student-centred computer applications. Therefore, conducting field research in the future would be highly beneficial for further exploration of this topic. Such research could provide deeper insights into the effectiveness and potential of creating computer applications focused on student-centred language learning. In-depth field studies offer a superior comprehension of how these applications could be optimised to cater to the requirements of individual learners, fostering a more personalised and captivating language learning experience.

In relation to the third question, "Are there current technologies that can enable the development of software applications that simulate the language teaching qualities of a human teacher?", the answer is negative. While the question is not directly addressed in any document, numerous documents explore, suggest, experiment with and discuss applications or technologies that aim to encompass certain qualities found in a human teacher. For instance, in the works of [22,23], chatbots are presented as computer applications developed for human interaction. These applications attempt to replicate some aspects of human teaching qualities in their interactions with learners.

In [86], NLU is discussed as a technology that can be integrated into an application to interpret human input, enabling the simulation of responses similar to those given by a human teacher during interactions with students. In general, AI technologies can play a significant role in facilitating the development of computer applications capable of simulating the language teaching qualities typically demonstrated by human teachers. The references provided in Section 3.3.3 support the aforementioned response. These references include algorithms provided by AI technologies that can be integrated into the development of applications simulating the qualities of human teachers. The subsection also highlights frameworks such as Nvidia Riva and RASA, which already incorporate these essential algorithms, thus demonstrating the potential for AI-driven solutions to emulate human-like teaching interactions and enhance the overall language learning experience for students.

Throughout this paper, several other intriguing questions arise that aim to enhance the understanding of this research. One of the primary inquiries pertains to the potential utili-

sation of specialised English language teaching software for languages other than English. Upon investigation, it was noted that many of the examined applications are employed for teaching diverse languages, English included. Consequently, the development of an application like the proposed one can indeed be adapted to cater to different languages, while incorporating the specific nuances and details pertinent to each language.

Another question that arises is the choice of the most suitable AI technique for developing specialised software to teach any language as a second language. It is worth noting that AI predominantly relies on artificial neural network models and machine learning algorithms [24]. The current trend suggests that transformer neural network models are particularly adept at comprehending human language, including understanding the context of words and capturing both their semantics and syntax [99]. Therefore, integrating this type of model into specialised language teaching software has the potential to yield favourable outcomes.

Furthermore, another question that emerges focuses on the utilisation of ChatGPT for English language teaching from a teacher–student perspective and the associated implications. Through the comprehensive examination of technologies for this study, particular attention was given to cutting-edge technologies, including ChatGPT. Based on conducted tests, this AI system has demonstrated its ability to provide coherent responses that align well with the posed queries. As a result, the underlying technology behind ChatGPT could be adapted for language teaching purposes.

Moreover, noteworthy projects in this domain were identified, such as OpenAI GPT [100,101], Hugging Face Transformers [101–103] and ParlAI [104,105], among others. These projects serve as examples of the ongoing exploration of utilising such technologies in the field of language education. Additionally, alongside the study of ChatGPT, other applications like DeepL, Duolingo and Busuu were also analysed. These applications incorporate a significant element of language diversity in their teaching and learning approaches, allowing users to choose the language they wish to work with, including English.

Lastly, building upon the aforementioned discussions, the potential for developing specialised software based on AI was considered in relation to the emergence of quantum computers, such as the one developed by IBM. It is important to note that quantum computers are not yet widely accessible, but their future utilisation holds the promise of significantly enhancing the capabilities of various computer applications, including those used for language teaching.

One notable advantage of quantum computers would be their ability to significantly reduce response times for AI algorithms when accessing extensive data collections, resulting in faster and more efficient responses. However, it is important to acknowledge that current computers have higher latency compared with the potential capabilities offered by quantum computers. Therefore, as quantum computing technology continues to advance, it is plausible to expect substantial improvements in the performance and efficiency of AI-based language teaching software applications.

Based on the findings and discussions presented in this documentary research, it is evident that there is significant scope for further research in the development of student-centred applications. This research should encompass both technical aspects, such as development and implementation, as well as pedagogical considerations.

Regarding technical aspects and implementation, while it is not the focus of this work, it is recommended that future research endeavours to develop student-centred applications with select technologies that are built around AI. This will enable applications to provide more realistic interactions within a broader context, thus fostering the development of fundamental language proficiency. The aim is to achieve enhanced language usability through the integration of AI technologies.

In terms of pedagogy, the Blended Learning method is proposed for integration in the future development of an application with exclusive learner-centred autonomy. As highlighted throughout this study, the proposed method adopts an eclectic approach and offers flexibility by combining the best elements of face-to-face and non-face-to-face

teaching, leveraging available technologies. This integration will enable a comprehensive and effective language learning experience for students.

Overall, further research should explore the technical and pedagogical aspects of developing student-centred applications, ensuring that they leverage AI technologies and incorporate the Blended Learning approach. This will pave the way for more robust and impactful language teaching and learning experiences.

4. Conclusions

In this study, documentary research was conducted to contrast traditional methods with emerging or modern methods from an eclectic perspective. The main objective was to understand and establish the most suitable method for language teaching through a computer application with learner-centred autonomy. It was concluded that the Blended Learning method can be integrated into the technical development and implementation of such a computer application.

This study also examined applications utilised for online English language teaching, particularly those that align with personalised learning environments and learner-centred autonomy. It should be noted that these applications are pedagogically rooted in the Audio-Lingual method. As a result, it can be inferred that the existing applications do not facilitate the attainment of language "usability" in a broader context.

The research findings indicate a potential shift in language education methodologies, suggesting that significant progress is expected through the development of computer applications. The analysed data strongly suggest that AI and emerging technologies will play a crucial role in driving the advancement of language teaching applications.

The specific role of traditional methods in the development of present and future language applications remains uncertain. However, a recurrent pattern is the emergence of innovative language teaching approaches, such as the Blender method. Analysing this method reveals its eclectic nature, combining the strengths of conventional approaches with emerging Information and Communication Technologies (ICT) in the field. There is a strong likelihood that this method can be seamlessly incorporated into an application alongside AI technologies.

As future work, and according to the conclusions discussed, there is an open door for further research in the field of computer applications for language teaching. In this sense, the development of a software application under the approach of personalised learning environments with learner-centred autonomy is proposed. A future application can be developed in two phases: a first phase to solve the pedagogical problems associated with speaking and listening practice in a controlled context and a second phase to solve the problem of language usability in a broad context as a core competence. In both cases, future work will also have to solve the technical problems associated with the selection of technologies developed around AI.

It is important to address the limitations that may have been encountered. Firstly, this study focused solely on the teaching of English as a second language and did not extend its investigation to other languages. While the discussion of approaches and methods hinted at their potential applicability to the learning of other languages, a more comprehensive exploration was not undertaken in this paper. It is worth noting that the analysis was conducted exclusively in English and did not include any other languages.

Another limitation pertains to the use of elicit.org (https://elicit.org/). If the appropriate question with suitable connectors is not formulated, the search results provided may not be entirely specific to the intended topic. To mitigate this limitation, careful selection of keywords related to the research topic was undertaken, alongside relevant questions and connectors, to obtain the most suitable results. Additionally, although efforts were made to cross-check results with other search engines, it is possible that some relevant sources may have inadvertently been overlooked or not thoroughly verified during the search on elicit.org (https://elicit.org/).

Besides the limitations imposed by the utilised search engine, there are additional concerns to consider. One of the significant challenges relates to comprehending the distinction between "method" and "approach" for individuals who are not familiar with the educational field of English language teaching and learning. This complexity poses a noteworthy obstacle for readers seeking a comprehensive understanding of the subject matter.

Finally, when reflecting on the study of different methods and approaches presented in this work, it can be understood that the success of a teaching–learning process requires a strong component of interactive, inspiring, enjoyable and challenging activities within an innovative and creative context aligned with the learner's interests. To implement these activities through a student-centred computer application, it will be necessary to emulate the capabilities of a teacher. This can be achieved not only by promoting innovation but also by integrating methods like Blended Learning together with AI-based technologies in the development of these applications.

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Abbreviations

The following abbreviations are used in this manuscript:

AI	Artificial Intelligence
ASR	Automatic Speech Recognition
TTS	Text To Speech
NLU	Natural Language Understanding
DM	Dialog Management

Appendix A

Table A1. Resource table.

Reference	Authors	Year	Keywords
[1]	Bordogna & Albano	2001	Multidisciplinary approach, Teaching-learning processes, Sociology
[2]	Bakkenes et al.	2010	Teacher learning, Professional learning, Workplace learning, Educational innovation
[3]	Bradford	1958	Teaching-Learning Transaction, Adult Education, Interactive Learning
[4]	Mengitsu et al.	2023	Lesson study, Classroom practice, Primary school English teachers, Collaboration
[5]	Uffen et al.	2022	Teacher learning, Teachers professional development, Lesson study
[6]	Iliescu	2014	Methods of Teaching, English as a Foreign Language, Pedagogical Approaches
[7]	Sekhar	2014	Teaching, learning, Second language, Grammar, Teacher
[8]	Ergashevna	2022	Effective learning approaches, Method, English, Language teaching

Table A1. *Cont.*

Reference	Authors	Year	Keywords
[9]	Sharma	2019	Eclectic Approach, Communicative Approach, Structural Approach, Audio-Lingual Method
[10]	Uygun	2013	Teaching education system, Foreign language learning, Teacher expectations
[11]	Bremner	2019	Effective teaching, Good teaching, Student perspectives, Qualitative methods
[12]	Sari et al.	2021	Speaking, ESP, Learning strategy
[13]	Nor et al.	2015	ESL, Language learning, Language skills, Vocabulary
[14]	Gan	2013	Speaking, English speaking difficulties, Language skill, Chinese learner of English
[15]	Mofareh	2019	Speaking, Difficulties, Skills
[16]	Bustillo et al.	2017	Gamification, Learning, Listening comprhension, English
[17]	Rai & Rajeshwari	2021	Online Teaching, Language Teaching, Learning, Education, Virtual Classroom
[18]	Gilakjani	2018	Teaching pronunciation, Computer technology, Teachers' views
[19]	Esra & Sevilen	2021	Online, Motivation, Case study, Student perceptions
[20]	Kamasak et al.	2021	Mobile-assisted language learning (MALL), Language teaching models (CLIL, EMI)
[21]	Loewen et al.	2019	Duolingo, MALL, Mobile-assisted language learning, Self-directed language learning
[22]	Fryer et al.	2017	Novel technology, Students' interest, Task interest, Human partner, Chatbot partner
[23]	Pham et al.	2018	Chatbot Language learning, Mobile application
[24]	Russell	2010	Artificial Intelligence, Natural Language Processing, Learning
[25]	Liu	2023	Computer information technology, Artificial intelligence software
[26]	Chiu et al.	2023	Artificial intelligence, Artificial intelligence in education, Systematic review
[27]	Niu	2022	Multimodality College English teaching, Artificial intelligence, Multimodal discourse
[28]	Sun et al.	2021	Artificial intelligence education (AIEd), Online English teaching system, Deep learning
[29]	Rusmiyanto et al.	2023	Artificial Intelligence (AI), English language, Communication skills
[30]	Zou et al.	2023	EFL, Speaking, Artificial intelligence, Speech evaluation system
[31]	De la Val & Araya	2023	Intelligent tools, Language learning, Personalised learning, AI in education
[32]	Mageira et al.	2022	Chatbot, Artificial intelligence, Educational technology, Interactive learning
[33]	Bashori et al.	2021	Automatic speech recognition, Vocabulary, Foreign language speaking
[34]	Winaitham	2022	Artificial intelligence functions, English learning and teaching, NLP
[35]	Sun & Li	2019	Education, Big Data, Data mining
[36]	Hilgendorf	2018	Grammar-Translation Method; Direct Method; Audio-Lingual Method;
[37]	Doff	2018	ELT, ELE, Academic discipline
[38]	Richards et al.	2014	Current approaches, whole language, task based language
[39]	Farrell & Jacobs	2020	Communicative language teaching
[40]	Larsen & Anderson	2000	Content-based, Task-based, Audio-Lingual method
[41]	Irwandi	2020	Eclectic method; English language teaching; Distance learning
[42]	Adebileje & Akinola	2020	Language teaching theories, Language learning theories, ESL, Methods, Approaches
[43]	Albubak & Msimeer	2021	Grammar Translation Method, Direct Method, Audio-Lingual Method
[44]	Wu	2021	Computer technology, English, Teaching
[45]	Aslamiah et al.	2022	English, Teaching, Methodology
[46]	Toro et al.	2019	Oral language, Communicative competence, Teaching methods, ESL
[47]	Alofi & Almalki	2022	Communicative competence, Teacher role, ESL, Training methods
[48]	Stepanechko	2022	The methodology of English, Immerse method, Communicative approach
[49]	Luisa & Renau	2016	CLIL Approach, Language Teaching in Spain, News Trends in Methodology
[50]	Goodman	1997	Inclusive Pedagogy, Language Teacher, Trade Book, Language Classroom
[51]	Stowe	2022	Whole language, Critical pedagogy
[52]	Kostikova et al.	2019	Competency-based approach, Foreign language teaching, Empirical analysis
[53]	Chen & Wang	2019	ESL, Task analysis, Teaching methods, Communication skills
[54]	Mart	2013	The Audio-Lingual method, Habit formation, Drills, Communication
[55]	Sebastian et al.	2020	Code generation, Language learning applications, Model-driven architecture
[56]	Rodrigues et al.	2019	E-learning; Education; Systematic review; Semantic analysis; Leximancer
[57]	Zhang	2021	Teaching methods, Second language learning, Writing skills, Linguistic input
[58]	Suputra	2021	ICT, online learning, teaching strategy
[59]	Krivoruchku et al.	2015	Second language learning, Competence, Electronic learning
[69]	Dangwal et al.	2017	Blended Learning, Educational Innovation, Instructional Innovation, Electronic Learning
[70]	Yunus	2018	ELT in 21st Century; technological advances and ELT; ELT in Malaysia
[71]	Ruiperez et al.	2017	Self-directed learning, Mobile learning, Computer-assisted, Language teaching
[72]	Bolatbek	2021	Mobile phone apps, Smartphone applications, Foreign language teaching
[73]	Ullrich et al.	2010	PLE, Mash-up, Experience report
[74]	Renzel et al.	2010	Social Sciences, Education & Educational Research, Collaborative Software Development
[75]	Chen	2022	Education, Mobile learning, Electronic learning, Languages

Table A1. *Cont.*

Reference	Authors	Year	Keywords
[76]	Muradkhanli	2011	eLearning, Blended Learning
[77]	Ramalingam et al.	2022	Systematic review, Blended Learning, Higher learning, ESL, Sustainable education
[78]	Yudhana	2021	Blended Learning, ESL, Reading skills, Language skills
[79]	Yang et al.	2022	Blended Learning, Comparative analysis, Teaching methods, Teaching styles
[80]	Wang et al.	2023	Artificial intelligence, Education, Adaptive learning, chatbots
[81]	Mahalli	2019	Implementation, Station, Rotation, Blended Learning, English learning
[82]	Peixoto et al.	2023	Virtual reality, Games, Education, Natural languages
[83]	Mofareh	2019	Modern, Technology, Teaching
[84]	Hockly	2023	Educational technologies, English language teaching, Artificial intelligence
[85]	Fitria	2021	Technology platforms, English language teaching, Artificial intelligence
[86]	Pokrivcakova	2019	Foreign language education, Artificial Intelligence, Machine learning, Adaptive learning
[87]	Woo & Choi	2021	Artificial Intelligence, Computer Assisted Language Learning, Educational Technology
[88]	Chen et al.	2021	Personalised language learning, Topic Modeling, Precision education
[89]	Zhao & Cai	2021	Machine learning, Artificial Intelligence, English, Key competences, Intelligent recognition
[90]	Han	2019	Artificial Intelligence, Autonomous Learning, College Students
[91]	Yang	2020	Artificial intelligence, English Teaching, Application
[92]	Mukhallafi	2020	English language teaching, Artificial Intelligence (AI), University students
[93]	Qian et al.	2020	Spoken language understanding, Human-machine conversational systems
[94]	Li et al.	2020	Task-based dialogue, Computer-assisted instruction, Task-based language learning
[95]	Aggarwal	2018	Deepl Learning, Machine Learning, Neural Networks
[96]	Maxwell et al.	2020	Multilingual corpora, Automated speech recognition, Language classroom
[98]	Bocklish et al.	2017	Rasa, NLU, Rasa Core, Conversational software
[99]	Vaswani et al.	2017	Sequence transduction models, Attention mechanism
[101]	Rothman & Gulli	2022	NLP, BERT Models
[102]	Wolf et al.	2019	Natural language processing, Transformer architectures, Pretrained models
[104]	Miller et al.	2017	ParlAI, Dialog research, Machine learning models
[106]	Chen	2022	English teaching, Interactive multimedia technology, Student-centred teaching mode

Table A2. Elicit matches focused on the use of the language.

Reference	Authors	What Was the Use of the Language?
[23]	Pham et al.	language learning
[51]	Stowe	process
[94]	Chang et al.	communicating with each other
[83]	Mofareh	English
[45]	Aslamiah	use of language
[13]	Nor et al.	listening comprehension
[49]	Renau & Luisa	develop a critical thinking
[90]	Han	English
[9]	Sharma	use of language
[55]	Sebastian et al.	language learning
[16]	Bustillo et al.	English
[69]	Lalima & Dangwal	-
[43]	Albubak & Msimeer	to promote learning of English
[17]	Rai & Rajeshwari	use of language
[104]	Miller et al.	use of language
[86]	Pokrivcakova	-
[72]	Bolatbek	English
[22]	Fryer et al.	language learning
[36]	Hilgendorf	use of language
[10]	Uygun	English
[41]	Irwandi	use of language, teaching English
[40]	Larsen	-
[91]	Yang	related to language learning
[54]	Mart	foreign language teaching
[52]	Kostikova et al.	English

Table A2. *Cont.*

Reference	Authors	What Was the Use of the Language?
[20]	Kamasak et al.	learning
[56]	Rodrigues et al.	-
[102]	Wolf et al.	Natural Language Processing (NLP)
[88]	Chen et al.	use of language, language learning
[14]	Gan.	spoken general communication and ethnic solidarity
[92]	Mukhallafi & Rabah	-
[11]	Bremmer	English
[50]	Goodman	to describe aspects of teaching
[2]	Bakkenes el al.	analysed in teacher reports of events
[42]	Adebileje & Akinola	use of language
[18]	Gilakjani	English

Table A3. Analysis of RQ benchmarks.

Reference Number	RQ1	RQ2	RQ3	DOI	Peer Review	Source
[1]	Infer	No	No	Yes	Yes	Initial
[2]	No	Infer	No	No	Yes	Initial
[3]	No	No	No	Yes	Yes	Initial
[4]	No	No	No	Yes	Yes	Initial
[5]	No	No	No	Yes	Yes	Initial
[6]	No	No	No	No	No	Elicit
[7]	Infer	Suggest	Infer	No	Yes	Initial/Elicit
[8]	No	No	No	No	Yes	Initial/Elicit
[9]	No	No	No	No	Yes	Initial/Elicit
[10]	Infer	No	No	Yes	Yes	Initial
[11]	No	No	No	Yes	Yes	Initial
[12]	Infer	No	No	No	Yes	Initial
[13]	No	No	No	No	Yes	Another
[14]	No	No	No	Yes	Yes	Initial
[15]	Suggest	No	Interpret	Yes	Yes	Initial
[16]	Interpret	Suggest	Infer	Yes	Yes	Another
[17]	Interpret	No	No	Yes	Yes	Initial
[18]	Interpret	No	No	Yes	Yes	Initial
[19]	Infer	Infer	No	No	Yes	Reviewer
[20]	Infer	No	No	Yes	Yes	Initial
[21]	Suggest	Suggest	No	No	Yes	Initial
[22]	Suggest	Suggest	Interpret	Yes	Yes	Initial
[23]	Interpret	Infer	Interpret	Yes	Yes	Elicit
[24]	Infer	No	Infer	No	No	Initial
[25]	Yes	Yes	No	Yes	Yes	Reviewer/Elicit
[26]	Infer	Infer	No	Yes	Yes	Reviewer
[27]	Suggest	Infer	Infer	Yes	Yes	Reviewer
[28]	Yes	Yes	Infer	Yes	Yes	Initial
[29]	Yes	Yes	Yes	Yes	Yes	Reviewer
[30]	Yes	Infer	Infer	Yes	Yes	Reviewer
[31]	Yes	Suggest	Yes	Yes	Yes	Reviewer/Elicit
[32]	Infer	Infer	No	Yes	Yes	Reviewer/Elicit
[33]	Infer	Suggest	Infer	Yes	Yes	Another
[34]	Yes	Infer	Infer	Yes	Yes	Reviewer
[35]	Interpret	No	Interpret	Yes	Yes	String
[43]	No	No	No	Yes	Yes	Elicit
[36]	No	No	No	No	Yes	Elicit
[48]	No	No	No	Yes	Yes	Initial/Elicit
[39]	Interpret	Interpret	No	No	-	Elicit

Table A3. *Cont.*

Reference Number	RQ1	RQ2	RQ3	DOI	Peer Review	Source
[45]	No	No	No	No	-	Elicit
[58]	Suggest	Suggest	No	No	Yes	Elicit
[86]	Yes	Infer	Yes	Yes	Yes	Elicit
[87]	Suggest	Infer	No	No	Yes	Elicit
[79]	Infer	No	Infer	Yes	Yes	String
[90]	Yes	Yes	Yes	Yes	Yes	Elicit
[94]	Suggest	Suggest	Interpret	Yes	Yes	Reviewer
[55]	Yes	Yes	Yes	Yes	Yes	Elicit
[38]	No	No	No	No	No	Initial/Elicit
[37]	No	No	No	No	No	Initial
[40]	No	No	No	No	-	Initial
[41]	Suggest	Suggest	No	Yes	Yes	Another
[42]	No	No	No	Yes	Yes	Initial
[44]	Suggest	No	No	Yes	Yes	Another
[46]	No	No	No	Yes	Yes	String
[47]	No	No	No	Yes	Yes	String
[49]	No	No	No	No	Yes	Initial/String
[50]	No	No	No	Yes	-	Elicit
[51]	No	No	No	Yes	Yes	Another
[52]	No	No	No	Yes	Yes	Another
[53]	No	No	No	Yes	Yes	String
[54]	Interpret	Suggest	No	Yes	Yes	Another
[56]	No	No	No	Yes	Yes	Another
[57]	Yes	No	No	Yes	Yes	String
[59]	Yes	Yes	No	Yes	Yes	String
[69]	Interpret	Interpret	No	Yes	Yes	Another
[70]	Interpret	No	Interpret	No	Yes	Another
[71]	Yes	Suggest	No	No	Yes	Another
[72]	Yes	Infer	No	No	Yes	Another
[73]	No	No	No	No	Yes	Another
[74]	Infer	Infer	No	Yes	Yes	Another
[75]	Yes	Suggest	No	Yes	Yes	String
[76]	Infer	Infer	No	No	Yes	Another
[77]	Suggest	Infer	No	Yes	Yes	Another
[78]	Yes	Infer	Interpret	Yes	Yes	String
[80]	Suggest	Infer	No	Yes	Yes	Another
[81]	No	Interpret	No	Yes	Yes	Another
[82]	Interpret	Infer	No	Yes	Yes	String
[83]	No	No	No	Yes	Yes	Another
[84]	Suggest	Infer	No	Yes	Yes	Another
[85]	Infer	Infer	No	Yes	Yes	Another
[88]	Infer	Infer	No	Yes	Yes	Another
[89]	Infer	Infer	No	Yes	Yes	Another
[91]	Yes	Yes	No	Yes	Yes	Elicit
[92]	Infer	No	No	Yes	Yes	Another
[93]	Yes	No	No	Yes	Yes	Another
[95]	Infer	No	Infer	No	-	Reviewer
[96]	Interpret	No	Interpret	Yes	Yes	String
[98]	Infer	Infer	Infer	Yes	Yes	Another
[99]	No	No	No	No	-	Another
[101]	Infer	Infer	Infer	No	Yes	Another
[102]	Infer	No	Interpret	No	Yes	Another
[104]	Yes	Yes	Yes	No	Yes	Another
[106]	Yes	Infer	No	Yes	Yes	String

References

1. Bordogna, C.M.; Albano, E.V. Theoretical Description of Teaching-Learning Processes: A Multidisciplinary Approach. *Phys. Rev. Lett.* **2001**, *87*, 118701. [CrossRef]
2. Bakkenes, I.; Vermunt, J.D.; Wubbels, T. Teacher learning in the context of educational innovation: Learning activities and learning outcomes of experienced teachers. *Learn. Instr.* **2010**, *20*, 533–548. [CrossRef]
3. Bradford, L.P. The Teaching-Learning Transaction. *Adult Educ.* **1958**, *8*, 135–145. [CrossRef]
4. Mengistu, M.A.; Worku, M.Y.; Melesse, T. Perceptions and practice of primary school English teachers in lesson study to improve their classroom practices. *Cogent Educ.* **2023**, *10*, 2196906. [CrossRef]
5. Uffen, I.; de Vries, S.; Goei, S.L.; van Veen, K.; Verhoef, N. Understanding teacher learning in lesson study through a cultural–historical activity theory lens. *Teach. Teach. Educ.* **2022**, *119*, 103831. [CrossRef]
6. Iliescu, A.B. Methods of Teaching English as a Foreign Language. In Proceedings of the Sibiu Alma Mater University Conference, 2014; Volume 8, pp. 304–308. Available online: https://api.semanticscholar.org/CorpusID:64882608 (accessed on 30 June 2023).
7. Sekhar, G.R. Methods, approaches and techniques to english language teaching and learning. *Acad. Int. Multidiscip. Res. J.* **2014**, *4*, 30–42.
8. Ergashevna, T.A. The Effective ways, Methods and Techniques for Teaching English. *Cent. Asian J. Lit. Philos. Cult.* **2022**, *3*, 32–37.
9. Sharma, M. Approaches and Methods of Teaching English as a Second Language: A Historical Perspective. *IJRAR-Int. J. Res. Anal. Rev.* **2019**, *6*, 381–387.
10. Uygun, S. How to Become an Effective English Language Teacher. *J. Educ. Soc. Res.* **2013**, *3*, 306. [CrossRef]
11. Bremner, N. What Makes an Effective English Language Teacher? The Life Histories of 13 Mexican University Students. *Engl. Lang. Teach.* **2019**, *13*, 163. [CrossRef]
12. Puspita Sari, D.; Asiyah, S.; Atiek Mustikawati, D.; Maghfiroh, A. The Difficulties Encountered by Non-English Department Students in Speaking English. *Engl. Focus. J. Engl. Lang. Educ.* **2021**, *4*, 1–13.
13. Nor, F.M.; Mazlan, M.H.; Rajab, A. Akademia Baru English Language Teachers' Perceived Difficulty of English Skills Faced by ESL Learners. *J. Adv. Res. Soc. Behav. Sci.* **2015**, *1*, 12–18.
14. Gan, Z. Understanding English speaking difficulties: An investigation of two Chinese populations. *J. Multiling. Multicult. Dev.* **2013**, *34*, 231–248. [CrossRef]
15. Alqahtani Mofareh, A. Difficulties Facing Students in English Language Conversation. *Int. Res. High. Educ.* **2019**, *4*, 51–57. [CrossRef]
16. Bustillo, J.; Rivera, C.; Guzmán, J.G.; Acosta, L.R. Benefits of using a mobile application in learning a foreign language. *Sist. Telemát.* **2017**, *15*, 55–68. [CrossRef]
17. Rai, B.S.; Rajeshwari, M. Online language teaching: Methods and strategies, possibilities and opportunities. *Int. J. Manag. Technol. Soc. Sci.* **2021**, *6*, 128–141. [CrossRef]
18. Gilakjani, A.P. Teaching Pronunciation of English with Computer Technology: A Qualitative Study. *Int. J. Res. Engl. Educ.* **2018**, *3*, 94–114. [CrossRef]
19. Esra, M.; Sevilen, Ç. Factors influencing EFL students' motivation in online learning: A qualitative case study. *J. Educ. Technol. Online Learn.* **2021**, *4*, 11–22.
20. Kamasak, R.; Özbilgin, M.; Atay, D.; Kar, A. The effectiveness of mobile-assisted language learning (MALL): A review of the extant literature. In *Handbook of Research on Determining the Reliability of Online Assessment and Distance Learning*; IGI Global: Hershey, PA, USA, 2021; pp. 194–212.
21. Loewen, S.; Crowther, D.; Isbell, D.R.; Kim, K.M.; Maloney, J.; Miller, Z.F.; Rawal, H. Mobile-assisted language learning: A Duolingo case study. *Recall* **2019**, *31*, 293–311. [CrossRef]
22. Fryer, L.K.; Ainley, M.; Thompson, A.; Gibson, A.; Sherlock, Z. Stimulating and sustaining interest in a language course: An experimental comparison of Chatbot and Human task partners. *Comput. Hum. Behav.* **2017**, *75*, 461–468. [CrossRef]
23. Pham, X.L.; Pham, T.; Nguyen, Q.M.; Nguyen, T.H.; Cao, T.T.H. Chatbot as an intelligent personal assistant for mobile language learning. In Proceedings of the ACM International Conference Proceeding Series, Tokyo, Japan, 25–28 November 2018; pp. 16–21. [CrossRef]
24. Russell, S.J. *Artificial Intelligence a Modern Approach*; Pearson Education, Inc.: Upper Saddle River, NJ, USA, 2010.
25. Liu, J. Design and implementation of a new online English learning artificial intelligence system based on JAVA. In Proceedings of the 2023 IEEE International Conference on Control, Electronics and Computer Technology (ICCECT), Jilin, China, 28–30 April 2023; pp. 680–684. [CrossRef]
26. Chiu, T.K.; Xia, Q.; Zhou, X.; Chai, C.S.; Cheng, M. Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Comput. Educ. Artif. Intell.* **2023**, *4*, 100118. [CrossRef]
27. Niu, L. Analysis of multimodal teaching of college english under the background of artificial intelligence. *Secur. Commun. Netw.* **2022**, *2022*, 3833106. [CrossRef]
28. Sun, Z.; Anbarasan, M.; Kumar, D.P. Design of online intelligent English teaching platform based on artificial intelligence techniques. *Comput. Intell.* **2021**, *37*, 1166–1180. [CrossRef]
29. Rusmiyanto, R.; Huriati, N.; Fitriani, N.; Tyas, N.K.; Rofi'i, A.; Sari, M.N. The Role of Artificial Intelligence (AI) In Developing English Language Learner's Communication Skills. *J. Educ.* **2023**, *6*, 750–757. [CrossRef]

30. Zou, B.; Guan, X.; Shao, Y.; Chen, P. Supporting Speaking Practice by Social Network-Based Interaction in Artificial Intelligence (AI)-Assisted Language Learning. *Sustainability* **2023**, *15*, 2872. [CrossRef]
31. De la Vall, R.R.F.; Araya, F.G. Exploring the benefits and challenges of AI-language learning tools. *Int. J. Soc. Sci. Humanit. Invent.* **2023**, *10*, 7569–7576. [CrossRef]
32. Mageira, K.; Pittou, D.; Papasalouros, A.; Kotis, K.; Zangogianni, P.; Daradoumis, A. Educational AI chatbots for content and language integrated learning. *Appl. Sci.* **2022**, *12*, 3239. [CrossRef]
33. Bashori, M.; Van Hout, R.; Strik, H.; Cucchiarini, C. Effects of ASR-based websites on EFL learners' vocabulary, speaking anxiety, and language enjoyment. *System* **2021**, *99*, 102496. [CrossRef]
34. Winaitham, W. The Scientific Review of AI Functions of Enhancement English Learning and Teaching. In Proceedings of the 2022 13th International Conference on Information and Communication Technology Convergence (ICTC), Jeju Island, Republic of Korea, 19–21 October 2022; pp. 148–152.
35. Sun, M.; Li, Y. Eco-environment construction of English teaching using artificial intelligence under big data environment. *IEEE Access* **2020**, *8*, 193955–193965. [CrossRef]
36. Hilgendorf, S.K. History of Language Teaching Methods. *Encycl. Appl. Linguist.* **2018**, *1*, 2522–2525.
37. Doff, S. English language teaching and English language education—History and methods. In *Teaching English as a Foreign Language: An Introduction*; Springer: Berlin/Heidelberg, Germany, 2018; pp. 1–16.
38. Richards, J.C.; Rodgers, T. *Approaches and Methods in Language Teaching*; Cambridge University Press: Cambridge, UK, 2014.
39. Farrell, T.S.; Jacobs, G.M. *Essentials for Successful English Language Teaching*; Bloomsbury Publishing: London, UK, 2020.
40. Larsen, D.; Anderson, M. *Techniques and Principles in Language Teaching*; Oxford University: Oxford, UK, 2000.
41. Irwandi, I. Implementing Eclectic Method for ELT through Distance Learning during the COVID-19 Pandemic. *Educatio* **2020**, *15*, 31–43. [CrossRef]
42. Adebileje, A.; Akinola, A. Teaching and learning english as a second language in Nigeria: Examining evolving approaches and methods. *Theory Pract. Lang. Stud.* **2020**, *10*, 1015–1024. [CrossRef]
43. Albukbak, O.A.; Msimeer, A.M. Methods and Approaches of Teaching English: A Historical Review. *Fac. Arts J.* **2021**, *17*, 79–98. [CrossRef]
44. Wu, Y. The Application of Computer Technology in English Teaching. In Proceedings of the 2021 2nd International Conference on Information Science and Education (ICISE-IE), Chongqing, China, 26–28 November 2021; pp. 1084–1087. [CrossRef]
45. Aslamiah, S.; Tinggi, S.; Tarbiyah, I.; Grogot, T.; Timur, K. English Language in Teaching Methodology. *Aser Engl. Educ. Linguist.* **2022**, *1*, 8–18. [CrossRef]
46. Toro, V.; Camacho-Minuche, G.; Pinza-Tapia, E.; Paredes, F. The Use of the Communicative Language Teaching Approach to Improve Students' Oral Skills. *Engl. Lang. Teach.* **2019**, *12*, 110–118. [CrossRef]
47. Alofi, R.A.; Almalki, M.S. Conceptualizing Communicative Language Teaching (CLT) in the EFL Context: Ethnographic Experiences of CELTA and Non-CELTA Holders. *Engl. Lang. Teach.* **2022**, *15*, 14–31. [CrossRef]
48. Stepanechko, O. Modern and Traditional Teaching Methods of English from the Perspective of Own Teacher's Experience. *Sci. Notes Natl. Univ.* **2022**, *14*, 127–129. [CrossRef]
49. Luisa, M.; Renau, R. A Review of the Traditional and Current Language Teaching Methods. *Int. J. Innov. Res. Educ. Sci.* **2016**, *3*, 2349–5219.
50. Goodman, K.S. Whole Language: The Whole Story. In *Encyclopedia of Language and Education: Knowledge about Language*; Springer: Dordrecht, The Netherlands, 1997; pp. 87–97.
51. Stowe, J.V. Connecting Whole Language and Critical Pedagogy. *Talk. Points* **2022**, *33*, 11–19. [CrossRef]
52. Kostikova, I.; Viediernikova, T.; Holubnycha, L.; Miasoiedova, S. The Competency-Based Approach to Passing First Certificate in English. *Rom. J. Multidimens. Educ. Rom. Pentru Educ. Multidimens.* **2019**, *11*, 117–130. [CrossRef]
53. Chen, S.; Wang, J. Effects of Task-Based Language Teaching (TBLT) Approach and Language Assessment on Students' Competences in Intensive Reading Course. *Engl. Lang. Teach.* **2019**, *12*, 119–138. [CrossRef]
54. Mart, C.T. The audio-lingual method: An easy way of achieving speech. *Int. J. Acad. Res. Bus. Soc. Sci.* **2013**, *3*, 63. [CrossRef] [PubMed]
55. Sebastián, G.; Tesoriero, R.; Gallud, J.A. Automatic Code Generation for Language-Learning Applications. *IEEE Lat. Am. Trans.* **2020**, *18*, 1433–1440. [CrossRef]
56. Rodrigues, H.; Almeida, F.; Figueiredo, V.; Lopes, S.L. Tracking e-learning through published papers: A systematic review. *Comput. Educ.* **2019**, *136*, 87–98. [CrossRef]
57. Zhang, Q. A Literature Review of Foreign Studies on the Impact of CALL on Second Language Acquisition from 2015. *Engl. Lang. Teach.* **2021**, *14*, 76–83. [CrossRef]
58. Suputra, D. Teaching English through online learning (A literature review). *Art Teach. Engl. Foreign Lang.* **2021**, *2*, 63–67. [CrossRef]
59. Krivoruchko, V.A.; Raissova, A.B.; Makarikhina, I.M.; Yergazinova, G.D.; Kazhmuratova, B.R. Mobile-Assisted Learning as a Condition for Effective Development of Engineering Students' Foreign Language Competence. *Int. Educ. Stud.* **2015**, *8*, 158–168. [CrossRef]
60. Duolingo. Available online: https://www.duolingo.com/ (accessed on 1 June 2023).
61. Busuu. Available online: https://www.busuu.com (accessed on 1 June 2023).

62. Zoom. Available online: https://zoom.us/ (accessed on 1 June 2023).
63. Skype. Available online: https://www.skype.com/ (accessed on 1 June 2023).
64. Tandem. Available online: https://www.tandem.net/ (accessed on 1 June 2023).
65. Verbling. Available online: https://www.verbling.com (accessed on 1 June 2023).
66. WhatsApp. Available online: https://www.whatsapp.com/ (accessed on 1 June 2023).
67. Blackboard. Available online: https://www.blackboard.com/ (accessed on 1 June 2023).
68. Moodle. Available online: https://moodle.org/ (accessed on 1 June 2023).
69. Dangwal, K.L. Blended Learning: An innovative approach. *Univers. J. Educ. Res.* **2017**, *5*, 129–136.
70. Yunus, M.M. Innovation in Education and Language Learning in 21st Century. *J. Sustain. Dev. Educ. Res.* **2018**, *2*, 33–34. [CrossRef]
71. Ruiperez, G.; García, J.C.C.; Arko, G.P. Strategies for fostering autonomous language learning through the use of mobile devices (mobile learning). *IJERI Int. J. Educ. Res. Innov.* **2017**, *8*, 281–292.
72. Bolatbek, S. Smartphone Applications in Teaching English as a Foreign Language: A Literature Review. *Suleyman Demirel Univ. Bull. Pedagog. Teach. Methods* **2021**, *55*, 26–33.
73. Ullrich, C.; Shen, R.; Gillet, D. Not yet ready for everyone: An experience report about a personal learning environment for language learning. In Proceedings of the Advances in Web-Based Learning—ICWL 2010: 9th International Conference, Shanghai, China, 8–10 December 2010; pp. 269–278. [CrossRef]
74. Renzel, D.; Höbelt, C.; Dahrendorf, D.; Friedrich, M.; Mödritscher, F.; Verbert, K.; Govaerts, S.; Palmér, M.; Bogdanov, E. Collaborative development of a PLE for language learning. *Int. J. Emerg. Technol. Learn. (iJET)* **2010**, *5*, 31–40. [CrossRef]
75. Chen, M.L. The Impact of Mobile Learning on the Effectiveness of English Teaching and Learning—A Meta-Analysis. *IEEE Access* **2022**, *10*, 38324–38334. [CrossRef]
76. Muradkhanli, L. Blended Learning: The integration of traditional learning and eLearning. In Proceedings of the 2011 5th International Conference on Application of Information and Communication Technologies (AICT), Baku, Azerbaijan, 12–14 October 2011; pp. 1–4. [CrossRef]
77. Ramalingam, S.; Yunus, M.M.; Hashim, H. Blended Learning strategies for sustainable English as a second language education: A systematic review. *Sustainability* **2022**, *14*, 8051. [CrossRef]
78. Yudhana, S. The Implementation of Blended Learning to Enhance English Reading Skills of Thai Undergraduate Students. *Engl. Lang. Teach.* **2021**, *14*, 1–7. [CrossRef]
79. Yang, C.H.; Huang, Y.; Huang, P. A Comparison of the Learning Efficiency of Business English between the Blended Teaching and Conventional Teaching for College Students. *Engl. Lang. Teach.* **2022**, *15*, 44–53. [CrossRef]
80. Wang, T.; Lund, B.D.; Marengo, A.; Pagano, A.; Mannuru, N.R.; Teel, Z.A.; Pange, J. Exploring the Potential Impact of Artificial Intelligence (AI) on International Students in Higher Education: Generative AI, Chatbots, Analytics, and International Student Success. *Appl. Sci.* **2023**, *13*, 6716. [CrossRef]
81. Mahalli, M. The Implementation of Blended Learning in English Learning. In Proceedings of the 3rd English Language and Literature International Conference, ELLiC, Semarang, Indonesia, 27 April 2019.
82. Peixoto, B.; Bessa, L.C.P.; Gonçalves, G.; Bessa, M.; Melo, M. Teaching EFL With Immersive Virtual Reality Technologies: A Comparison With the Conventional Listening Method. *IEEE Access* **2023**, *11*, 21498–21507. [CrossRef]
83. Mofareh, A. The Use of Technology in English Language Teaching. *Front. Educ. Technol.* **2019**, *2*, 168. [CrossRef]
84. Hockly, N. Artificial Intelligence in English Language Teaching: The Good, the Bad and the Ugly. *RELC J.* **2023**. [CrossRef]
85. Nur Fitria, T. The Use Technology Based on Artificial Intelligence in English Teaching and Learning. *J. Engl. Lang. Teach. Foreign Lang. Context* **2021**, *6*, 213–223. [CrossRef]
86. Pokrivcakova, S. Preparing teachers for the application of AI-powered technologies in foreign language education. *J. Lang. Cult. Educ.* **2019**, *7*, 135–153. [CrossRef]
87. Woo, J.H.; Choi, H. Systematic Review for AI-based Language Learning Tools. *arXiv* **2021**, arXiv:2111.04455.
88. Chen, X.; Zou, D.; Xie, H.; Cheng, G. International Forum of Educational Technology & Society Twenty Years of Personalized Language Learning. *Educ. Technol. Soc.* **2021**, *24*, 205–222.
89. Zhao, T.; Cai, Y. Improvement of English key competences based on machine learning and artificial intelligence technology. *J. Intell. Fuzzy Syst.* **2021**, *40*, 2069–2081. [CrossRef]
90. Han, B. Application of artificial intelligence in autonomous English learning among college students. *Int. J. Emerg. Technol. Learn.* **2019**, *14*, 63–74. [CrossRef]
91. Yang, G. The Application of Artificial Intelligence in English Teaching. *Int. J. Front. Sociol.* **2020**, *2*, 76–81.
92. Mukhallafi, T.R.A. Using Artificial Intelligence for Developing English Language Teaching/Learning: An Analytical Study from University Students' Perspective. *Int. J. Engl. Linguist.* **2020**, *10*, 40. [CrossRef]
93. Qian, Y.; Ubale, R.; Lange, P.; Evanini, K.; Ramanarayanan, V.; Soong, F.K. Spoken language understanding of human-machine conversations for language learning applications. *J. Signal Process. Syst.* **2020**, *92*, 805–817. [CrossRef]
94. Li, K.C.; Chang, M.; Wu, K.H. Developing a task-based dialogue system for English language learning. *Educ. Sci.* **2020**, *10*, 306. [CrossRef]
95. Aggarwal, C.C. *Neural Networks and Deep Learning*; Springer: Cham, Switzerland, 2018; Volume 10, p. 3.

96. Maxwelll-Smith, Z.; Ochoa, S.G.; Foley, B.; Suominen, H. Applications of natural language processing in bilingual language teaching: An Indonesian-English case study. In Proceedings of the Fifteenth Workshop on Innovative Use of NLP for Building Educational Applications, Seattle, WA, USA, 9–10 July 2020; pp. 124–134.
97. Nvidia Riva. Available online: https://developer.nvidia.com/riva (accessed on 4 June 2023).
98. Bocklisch, T.; Faulkner, J.; Pawlowski, N.; Nichol, A. Rasa: Open Source Language Understanding and Dialogue Management. *arXiv* **2017**, arXiv:1712.05181.
99. Vaswani, A.; Shazeer, N.; Parmar, N.; Uszkoreit, J.; Jones, L.; Gomez, A.N.; Kaiser, L.; Polosukhin, I. Attention is all you need. *Adv. Neural Inf. Process. Syst.* **2017**, *30*, 1–15.
100. openAI. Available online: https://openai.com/ (accessed on 30 June 2023).
101. Rothman, D.; Gulli, A. *Transformers for Natural Language Processing: Build, Train, and Fine-Tune Deep Neural Network Architectures for NLP with Python, Hugging Face, and OpenAI's GPT-3, ChatGPT, and GPT-4*; Packt Publishing Ltd.: Birmingham, UK, 2022.
102. Wolf, T.; Debut, L.; Sanh, V.; Chaumond, J.; Delangue, C.; Moi, A.; Cistac, P.; Rault, T.; Louf, R.; Funtowicz, M.; et al. HuggingFace's Transformers: State-of-the-art Natural Language Processing. *arXiv* **2019**, arXiv:1910.03771.
103. Hugging Face Transformer. Available online: https://huggingface.co/docs/transformers/index (accessed on 30 June 2023).
104. Miller, A.H.; Feng, W.; Fisch, A.; Lu, J.; Batra, D.; Bordes, A.; Parikh, D.; Weston, J. ParlAI: A Dialog Research Software Platform. *arXiv* **2017**, arXiv:1705.06476.
105. ParlAI. Available online: https://parl.ai/ (accessed on 30 June 2023).
106. Chen, P. Design and construction of an interactive intelligent learning system for english learners in higher education institutions. *Adv. Multimed.* **2022**, *2022*, 6364796. [CrossRef]