CHAPTER II
LITERATURE REVIEW

Some theory relates to and supports this study will be discussed here. The theory will discuss a lot about teaching English using Artificial Intelligence (AI) which becomes the focus of this study.

A. Tools in Teaching

Tools in teaching are tools or devices used in the learning process to assist teachers in conveying subject matter effectively and assist students in understanding and mastering the material (Gasser et al., 2020). Using these tools can increase student engagement, enrich learning experiences, and facilitate understanding of concepts more concretely.

1. Definition of Tools

Tools in teaching refer to the various resources and technologies used by educators to facilitate the learning and teaching process. These tools can be physical or digital, and cover a wide range from traditional classroom materials such as textbooks and whiteboards to more advanced technologies such as virtual reality and artificial intelligence (Agner et al., 2019; Xie, et al., 2020). The use of tools in teaching has increased in recent years as educators seek to engage students in more interactive and personal learning experiences.

The use of tools in teaching is also important because it has the potential to increase student engagement, promote deeper understanding, and facilitate student-centered learning. By using these tools, educators can create a more interesting learning environment, motivate students to actively participate, and build connections between abstract concepts and real experiences (Bader et al., 2021; Ishak et al., 2021; Jobirovich, 2022). For example, the use of physical tools such as mathematical manipulatives or physical models can help students visualize and understand difficult concepts. By manipulating these objects, students can engage their senses and develop a more concrete understanding. On the other hand, digital tools such as learning software, interactive multimedia, or smartphone applications can provide access to rich information, realistic

simulations, and adaptive learning experiences. Students can study at their own pace, explore material interactively, and get immediate feedback. Additionally, the use of technologies such as virtual reality or artificial intelligence can open doors to immersive and immersive learning experiences. Students can explore distant places, solve complex problems, or interact with virtual characters, which can increase motivation and engagement in the learning process.

2. The Difference between a tool and a media

The difference between tools and media lies in their functions and characteristics in the context of teaching. The following is an explanation of the difference between tools and media.

a. Based on a function

Tools in teaching refer to physical objects or devices that are used directly by educators or students to facilitate the learning process. This tool acts as a tool or instrument used to explain concepts, visualize information, or involve students in learning activities (Alshehri, 2019; Gelinas et al., 2017). Examples of tools in teaching are blackboards, math manipulatives, or projectors. Meanwhile, media in teaching refers to the content or information used in the teaching process. Media serves as a source of information or material that is conveyed to students to increase their understanding. Examples of media in teaching include textbooks, instructional videos, illustrated images, or multimedia presentations (Kolak et al., 2021).

b. Based on the shape

Tools in teaching can be physical objects that can be touched and used directly. For example, blackboards, physical models, or math manipulatives are physical forms of teaching tools. Tools can also be in the form of electronic devices such as computers, tablets, or projectors (Wiyono et al., 2020). On the other hand, media in teaching can be in the form of various types of content or materials that can be accessed through various platforms or formats. For example, textbooks can be in the form of physical printouts or digital versions that can be accessed via electronic devices. Learning videos can be presented via DVD, online streaming, or downloadable video files.

c. Based on the role

Tools in teaching are usually used actively by educators or students in the learning process (Kavoura et al., 2020). These tools can assist educators in explaining concepts, visualizing information, or inviting students to participate in learning activities. Meanwhile, the media in teaching functions as a source of information conveyed to students. This media provides content that students can listen to, read, or interact with. It is important to note that tools and media in teaching are often interrelated and can be used together to create more effective learning experiences. Tools can be used to present or access media, while media can be strengthened or made easier by using appropriate tools**.**

3. Types of Tools

There are three types of teaching aids that educators can use to enhance student learning experiences (Aguilar, 2020). First, physical tools such as blackboards, physical models, mathematical manipulatives, and visual media such as posters or pictures can help visualize and understand the concepts being taught. These tools allow students to see and feel real objects which can help build a more concrete understanding. Second, digital tools such as computers, projectors, learning software, and interactive multimedia can provide access to rich and interactive digital resources. The learning software allows teachers to create multimedia presentations, interactive modules, and practice exercises that can be personalized according to students' needs. Interactive multimedia such as learning videos, computer simulations, or learning games allow students to learn through engaging experiences and actively participate. Third, cutting-edge technologies such as virtual reality (VR) and artificial intelligence (AI) are also providing new possibilities in teaching. With VR, students can explore faraway places and interact with virtual environments that support deep learning. Meanwhile, artificial intelligence can be used in adaptive learning applications that provide direct feedback and adapt the material to students' level of understanding. In addition, there are teaching aids such as building blocks, tangrams, abacus templates, or other manipulative tools that can be used to teach math, science, or language concepts in a practical, experience-based approach. The use of these

teaching aids gives educators the flexibility to choose tools that suit the subject matter and student needs. By combining these different types of tools, educators can create engaging, interactive learning experiences and facilitate a better understanding of concepts.

4. The Use of Tools in Teaching

The use of teaching tools is critical to improving learning effectiveness and student engagement. These tools act as tools or instruments used by educators to facilitate the learning process. Through the use of tools, educators can visualize concepts, explain information more clearly, and engage students in interactive learning activities (Debroy et al., 2019; Quratul'Ain et al., 2019). Teaching tools also help students understand abstract concepts through more concrete visualizations. In addition, these tools can enrich students' learning experiences by providing variety in the delivery of material, from the use of whiteboards and math manipulatives to cutting-edge technologies such as virtual reality and artificial intelligence. Thus, the use of tools in teaching plays an important role in creating engaging, interactive, and immersive learning experiences for students.

5. Benefits and Drawbacks of Tools in Teaching

The use of tools in teaching has significant benefits in increasing the effectiveness of learning, but it also has several weaknesses that need attention. The benefits of using tools in teaching include increasing student engagement (Holstein et al., 2018). Tools such as interactive multimedia, learning games, or cutting-edge technologies such as virtual reality can make learning more interesting so that students are more motivated and active in the learning process. These tools can also enrich students' learning experiences, help visualize difficult concepts, and facilitate independent learning. In addition, the use of tools in teaching can adjust learning methods according to the needs of students. By using a variety of tools, educators can vary the delivery of material, accommodate different learning styles, and increase student understanding. Tools can also facilitate learning evaluation, with learning software that can provide automatic practice questions or direct feedback. However, the use of tools in teaching also

has some drawbacks. One of them is dependent on technology. When digital tools experience technical problems, they can affect the smoothness of learning and take time to fix them. In addition, not all tools are suitable for all learning contexts. Educators need to choose a tool that fits the learning objectives, the level of suitability with the material, and student characteristics. In addition, there is also the risk of using tools that are not very effective if they are not used properly. For example, relying too much on multimedia without direct interaction or only focusing on tools without paying attention to interactions between teachers and students. Therefore, it is important for educators to consider the balance between the use of tools with personal interaction and student-centered learning methods.

6. Kinds of Tools in Teaching

In modern times, technological advances have changed the way conducted in teaching and learning processes. The use of assistive devices in teaching has become a crucial element in the education system. There are several tools that can be used in teaching practice.

a. Blackboard or whiteboard

A blackboard is a traditional teaching tool still used in many classrooms that do not have digital displays. It allows writing information on the board for students to read during lessons, such as critical points or examples, with chalk (Campbell et al., 2019; Irani et al., 2020; Reguera & Lopez, 2021). A whiteboard offers a more modern alternative to a traditional blackboard. In place of chalk, a whiteboard allows to use dry-erase markers, which are usually cleaner and easier to use.

b. Calculator

Someone may need a basic calculator that performs addition, subtraction, multiplication, and division functions or a more advanced calculator, such as a graphing calculator, for more complex calculations (Parrot & Leong, 2018). The calculator may also be a physical object or a digital calculator, such as an app on a computer, phone, or tablet. A calculator can help complete math more quickly and accurately to save time and deliver correct results.

c. Computer

Both administrative and instructional chores might be completed using a computer (Wang, 2022; Zawacki-Richter & Latchem, 2018). Someone can use a laptop they bring daily or a computer in the classroom. So may utilize the computer to aid in teaching classes, such as by generating presentations or managing a digital display in class, in addition to managing the scores using digital or online grade books.

d. Digital Whiteboard

In the classroom, digital whiteboards act like traditional whiteboards. According to Bautista-Vallejo et al., (2020), digital whiteboards feature touch screens or rely on external control via a computer or application. When used in the classroom, these tools can enhance the ability to integrate items such as images, videos, and other multimedia components. In addition, this tool can also increase the capacity of students' abilities to assimilate the material provided properly to produce more exciting learning.

e. Educational Games

Making learning fun can be the best way to help students learn the information being taught. Using game mechanics as educational software can reinforce lesson content and be a valuable tool for strengthening classroom learning (Hooshyar et al., 2019). If students feel they enjoy learning by using the game, they will participate more so that it can help them retain information more easily.

f. Grading Software

Gradebook programs are a popular method of managing student grades. These programs allow teachers to enter student scores on different assignments and adjust each assignment's rating scale and weight as desired (Alber, 2018). The grading software maintains an up-to-date record of each student's grades in learning. The grading software application also allows students and parents to access and view the final scores from teachers. This helps to keep all parties informed about student progress throughout the school year.

g. Messaging Apps

Communication is essential in a classroom during and after school (Sun et al., 2018). Messaging applications are valuable tools for remaining in contact with students and their parents. Many messaging apps are designed for school use, which allows sending both direct or group messages (Dhir et al., 2020). These apps can make it easy to contact parents or students to discuss a student's performance or to send out group announcements, such as upcoming events or class changes.

h. Presentation software

Presentation software can be used to create projected or displayed slides on a digital screen. It can include multimedia elements in the presentation to make it more exciting and informative to help keep students' focus when learning and may positively impact their educational growth.

i. Projector

Projectors make learning more attractive because they can display images on walls or screens that can be seen by the whole class (Amin et al., 2018). Traditional projectors use a light source, a transparent sheet, and a mirror to project an image on the wall. Meanwhile, digital projectors can be directly connected to a computer or tablet. This tool allows it to display visuals such as pictures or videos in class, offering more stylistic choices when conveying information in presentations.

j. Online scheduling applications

This tool can maintain schedules for students and parents to understand and also provide benefits for teachers (Holstein et al., 2019). An online scheduling app can be a powerful tool for doing this because, with an online schedule, students can access a timetable that lists important activities for the class. Teachers can also add items to all student schedules at once and individual elements to student schedules, such as reminders for planned meetings with students or parents to define responsibilities and help students complete required assignments on time.

k. Quiz maker

Quizzes and tests are an important method of assessing your students' development in a class. Quiz-making software seeks to improve the process of designing and administering quizzes or tests to your students (Utami et al., 2022). This may include software designed to help you create paper tests more efficiently, as well as software designed to allow you to administer digital tasks, either in the classroom or remotely (Radjibu et al., 2020; Setiawan & Wiedarti, 2020).

l. Smart screens

Smart screens are digital displays that allow you to connect them to your smartphone or computer through an internal network or Bluetooth connection (Marra et al., 2021). A smart screen may allow you to set control levels for different devices connected to the screen. For example, these might allow you to grant access to a student for a short time as they deliver a presentation. A smart screen can add versatility to your classroom, making it easier to complete a range of educational tasks.

m. Spreadsheet program

Spreadsheet programs provide you with a grid of cells that you can fill with information. They often include a selection of tools and macros you can use to complete tasks automatically, as well as formatting options to adjust the appearance of your sheet and make it easier to understand (Broman & Woo, 2018; **Csapó** et al., 2020). A teacher without access to specifically designed grading software may use a spreadsheet program to create their own grade book. Spreadsheets are also an excellent way to create data sets, tables, graphs, and charts.

n. Tablet

A tablet is a handheld digital device that allows you to use applications. App developers create the software you may download onto your tablet to customize and improve its functionality (Fu et al., 2018). Many of the other digital teaching devices on this list can take advantage of a tablet

(Herodotou, 2018). Tablets benefit you as a teacher due to their combination of a diverse set of abilities contained within a small and portable object.

o. Test scanner

Test scanning tools allow you to quickly organize results on quizzes or tests you administer to your students. Test scanning devices commonly make use of multiple-choice test pages, where students fill in bubbles or squares to denote their responses to questions (Egger et al., 1997; Esmailzadeh et al., 2018). The scanning device allows you to pass a completed test through the device, with the machine automatically assessing the bubbles and providing a score based on the total number of correct and incorrect answers provided by the student.

p. Video conferencing apps

In recent years, remote learning has grown in popularity, with many classrooms adopting entirely digital lessons as permanent or temporary teaching solutions. Video conferencing applications allow teachers to communicate remotely with students by broadcasting live videos of themselves. Video conferencing applications also enable instructors to share their screens with students. This enables the teacher to deliver presentations to the students as if they were in the same room (Singh et al., 2020).

q. Video tutorials

Video tutorials provide students with lectures or explanations in a handy video format (Ayu et al., 2020). Teachers may supplement their classroom instruction with online video lectures. Giving students access to an online video covering the material they recently studied may aid them in completing homework or preparing for quizzes and examinations. A video provides students with an additional opportunity to study the subject with an experienced professional. teacher may make their video tutorials or use those available online from reputable suppliers.

r. Virtual classroom

Virtual classrooms offer purpose-built environments for managing remote classes (Biswas & Nandi, 2020; Lovreglio et al., 2021). A virtual

classroom often incorporates many remote teaching tools, such as videoconferencing, scheduling, and online grade books. Using a virtual classroom may be beneficial when teaching an entirely remote class, where the specialized nature of the software can offer enhanced customization to cater to your online class to meet your students' and your personal needs.

7. Effective Integration of Tools in the Classroom

Successful integration of tools in the classroom refers to the practice of utilizing tools in teaching in a way that enriches the learning experiences of students and increases the efficacy of learning (Young et al., 2018),. The following are some of the actions that may be performed to successfully implement the tool in the classroom:

a. Identifying Learning Objectives: The first stage is to identify the learning objectives that will be met by utilizing the tool. Educators must be clear about what they want their pupils to accomplish by utilizing the tool.

b. Choose Relevant Tools: Once the teacher has determined your learning objectives, the next step is to choose relevant and appropriate tools to help the teacher attain them. Educators must examine the tool qualities, features, and skills that are relevant to the learning setting and students' requirements.

c. Carefully Prepare the Tools: It is critical to ensure that the tools that will be utilized are ready for use in the classroom. This involves ensuring tool availability, ensuring hardware and software are operational, and preparing materials or information for usage with the tool.

d. Provide Training: If the tool being used is relatively new to educators or students, it is important to provide sufficient training so that they can use it effectively. This training can be in the form of introductory sessions, usage guides, or practical guidance in using the tool.

e. Integrating with the Curriculum: Effective tool integration requires a close relationship between the use of the tool and the existing curriculum. Educators need to identify how these tools can be synergistically integrated with existing learning materials and develop relevant teaching strategies.

f. **Facilitating Collaboration and Discussion**: Tools can be a means of encouraging collaboration and discussion among students. Educators can use the tool as a means of communication, sharing ideas, or working together on group projects or assignments. This can encourage student engagement and enhance their understanding through social interaction.

g. **Evaluation and Reflection**: After using the tool, it is important to evaluate and reflect on the experience. Educators need to evaluate the extent to which the tool has achieved learning objectives, the effectiveness of its use, and its impact on student understanding. From this evaluation, adjustments, and improvements can be made for more effective use of the tool in the future.

Integration of technological instruments into instruction that is both effective and efficient requires careful preparation, accurate execution, and constant assessment. Educators can produce more dynamic and engaging learning experiences by making strategic and well-planned use of the instruments at their disposal.

B. Tools in teaching English

Within the context of today's educational system, the utilization of various instructional aids in the classroom is taking on an increasingly crucial role. It is possible to improve the teaching and learning process, increase students' engagement, and make the process of language acquisition more successful by making use of a variety of tools and resources. This theoretical framework intends to give a complete knowledge of the major principles and strategies for integrating media in teaching English, taking into account the pedagogical methods, advantages, obstacles, and considerations for effective implementation. Its purpose is to do this by providing an overview of the fundamental concepts and tactics.

1. Pedagogical Approaches Using Tools in Teaching English

In recent years, there has been a change in the pedagogical techniques that are employed in the classroom for teaching English to speakers of other languages. The need for learners to develop the ability to use English in real-

world settings and a growing understanding of the value of communication competence have driven this change. This movement has been driven by a rising recognition of the importance and need for communicative competence. In the following paragraphs, the researcher has investigated some of the most important pedagogical innovations that have surfaced in the English classroom since 2017.

a. Task-Based Language Teaching (TBLT)

Task-Based Language Teaching (TBLT) is a method of language learning that stresses the use of activities as the foundation (Ellis, 2021; Moore, 2018; Mulyadi et al., 2021). In this technique, learners are given activities that require them to apply English in real-life circumstances (Chen & Wang, 2019; Chua & Lin, 2020). The emphasis is on the communication process rather than the precision of language use. TBLT has been shown to be beneficial in enhancing learners' ability to utilize English in real-life settings and in promoting communicative competence. Students can use common tools such as online games, simulations, mobile apps that allow students to complete realistic tasks and scenarios in English. For the example, students use a mobile chatbot app to order food and make small talk with the bot in English, completing a real-world conversational task.

b. Content and Language Integrated Learning (CLIL)

CLIL is a strategy that merges the teaching of subjects and languages. Learners are taught subject content in English in this manner, with the goal of increasing both their language abilities and their topic knowledge (Lozano et al., 2019). This technique has been shown to be successful in improving both language acquisition and topical learning. Students can use common tools such as interactive online learning modules, videos, infographics, multimedia to teach content and English simultaneously. For the example students watch an explanatory science video in English and then complete online quizzes and activities to check comprehension.

c. Flipped Classroom

The usual classroom concept is reversed in the flipped Classroom method (Awidi & Paynter, 2019; Chuang et al., 2018). Under this method, learners are given access to educational materials outside of the classroom, such as films or online resources (Hew & Lo, 2018). The remainder of the class period is devoted to interactive activities such as group projects or discussions. The Flipped Classroom technique has been shown to be beneficial in increasing learner engagement and giving more possibilities for interaction and collaboration. Common tools used by students can be Online videos, readings, podcasts for students to access material at home before in-class discussion. Students can watch a subtitled English documentary for homework in preparation for an in-class group discussion.

d. Communicative Language Teaching (CLT)

Communicative Language Teaching (CLT) is a method of language acquisition that stresses the significance of conversation. Learners are encouraged to utilize English in real-life circumstances in order to improve their communication abilities (Armnazi & Alakrash, 2021). This technique has been shown to be helpful in enhancing learners' communicative competence and their capacity to utilize English in real-life circumstances. Common tools can used by students are Flashcards, games, role playing activities to spur realistic communication scenarios. The students can makes groups roleplay customer and shopkeeper scenarios using props to practice conversational English.

e. Task-Based Language Assessment (TBLA)

The Task-Based Language Evaluation (TBLA) method stresses the use of tasks as the foundation for language evaluation. In this method, learners are given activities that challenge them to apply English in real-life settings (Ellis, 2017; Gan & Leung, 2020; Magnusson & Godhe, 2019). The emphasis is on the communication process rather than the precision of language use. It has been discovered that TBLA is beneficial in improving communicative competence and giving a more authentic evaluation of learners'

language abilities. Common tools that can be used by students are Interactive online tasks, simulations, and apps to allow realistic usage of English in assessments. The example, students complete a simulated email task by responding to a prompt requiring the use of appropriate conventions and language.

2. Benefits of tools in Teaching English

The use of teaching aids in learning English has several advantages, such as helping students understand the subject matter more easily and quickly, increasing student motivation in the learning process, improving students' skills in speaking, listening, reading, and writing English increasing student creativity in the learning process. The use of teaching aids in learning English has several advantages. For example: Visual aids like images, videos, and presentations can help students better understand concepts and vocabulary by providing visual representations. They can see the words they are learning depicted in photos, videos, or diagrams. Next, audio tools like songs, podcasts, and recordings of conversations can improve students' listening and speaking skills. They are exposed to native pronunciations, accents, inflections, etc. Then, games and simulations create an engaging and interactive way for students to practice communicating in English. Playing a roleplay game forces them to use the language. Lastly, online tools and apps allow students to get extra practice outside of class at their own pace. Duolingo, Quizlet, and other digital tools provide personalized learning.

3. Challenges and Considerations

The use of teaching aids in English learning has various problems, including the following: the high expense of purchasing excellent teaching aids; a lack of teacher expertise in the efficient use of teaching aids; and a lack of teacher knowledge in the effective use of teaching aids. Lack of school support in obtaining high-quality teaching tools These problems are addressed to create a basis for educators to properly incorporate tools into English instruction. Educators may develop interesting and successful language learning environments

by aligning pedagogical approaches with tool types and taking into account the accompanying benefits, problems, and considerations.

Future studies and cooperation are welcome to further investigate and enhance this theoretical framework, allowing educators to fully utilize media in the classroom. The integration of teaching aids into educational settings presents several noteworthy challenges. Foremost among these is the financial barrier associated with acquiring tools. For instance, digital subscriptions to platforms such as online workbooks or language apps can impose a significant burden on limited budgets, rendering it challenging for institutions to provide accounts for all students. Additionally, the utilization of teaching aids is impeded by the deficiency in teacher expertise. In particular, educators may lack proficiency in maximizing the potential of tools like interactive whiteboards for group editing/annotating texts and conducting listening exercises, leading to passive student engagement. Furthermore, the effective incorporation of games and roleplays necessitates careful planning aligned with learning objectives, as an absence of guidance may result in activities that prioritize competition over language practice. Compounding these challenges is the dearth of technical support, manifesting in issues such as glitchy audio equipment, poor internet connectivity, and outdated hardware/software. The resolution of these technological impediments not only demands valuable class time but also introduces disruptions to the seamless execution of lesson plans.

To effectively tackle those issues, several factors merit careful consideration. Firstly, funding and budgetary allocations must account for the sustained expenses linked to digital tools and the replacement of damaged equipment. Secondly, dedicating time during professional development days to hands-on workshops geared toward the effective utilization of media is imperative. Additionally, ensuring the availability of IT support staff to assist teachers in addressing any technological challenges that may arise is crucial. Furthermore, it is essential that lessons be holistically designed, steering away from the incorporation of aids merely as an appendage, devoid of a clear educational purpose. The successful integration of engaging aids into teaching

practices, while avoiding common pitfalls, hinges on the establishment of a robust infrastructure, comprehensive training initiatives, and meticulous lesson planning. However, it is essential to acknowledge that realizing these objectives necessitates a significant investment, coordinated efforts, and thoughtful strategic planning.

C. AI as a teaching tool

Artificial Intelligence (AI) is a technology that allows machines to learn from experience and accomplish activities that would ordinarily require human intellect (Barredo Arrieta et al., 2020; Luckin et al., 2016). AI has grown in popularity as a teaching tool in recent years. AI may assist instructors in providing more individualized and effective instruction, as well as assist students in learning in a more dynamic and engaging manner (Bozkurt, 2023; Touretzky et al., 2019).

1. Benefits of AI as a Teaching Tool

As a teaching tool, AI offers various advantages. First, AI can give individualized and customized instruction to meet pupils' particular requirements. Second, AI can give immediate feedback and help students fix their mistakes. Third, AI may deliver dynamic and engaging instruction, increasing students' interest and motivation to study.

2. Use of AI as a teaching tool

AI may be utilized in a variety of instructional domains, including mathematics, science, and languages (Cope et al., 2021). In learning English, for example, AI may assist students in improving their pronunciation while also providing quick feedback. Furthermore, AI may be employed in mathematics learning, where AI can assist students in solving problems and providing appropriate solutions (Shin, 2021).

3. Challenges of AI as a Teaching Tool

While AI offers numerous benefits as a teaching tool, there are certain obstacles to overcome. First and foremost, AI is currently incapable of entirely replacing the job of the instructor. Second, AI is still incapable of resolving complicated issues that require deeper knowledge. Third, AI as a teaching tool has yet to overcome ethical and privacy problems.

4. Supporting Theories Using Artificial Intelligence (AI) as a Teaching Tool

In recent years, the use of artificial intelligence (AI) as a teaching tool has grown in popularity. Several hypotheses have been created to justify the use of artificial intelligence as a successful teaching aid. These are some of the theories:

a. Constructivism Theory

According to Constructivism theory, learning happens when people develop their knowledge and understanding via experience and reflection (Jones & Brader-Araje, 2000). Constructivism may be implemented in the context of employing AI as a teaching tool by providing students with interactive and adaptable learning experiences (Jia, 2010). AI can help students build their knowledge by providing timely and relevant feedback.

b. Cognitive Theory

The cognitive theory states that learning occurs through complex mental processes such as paying attention, remembering, and processing information (Schunk & DiBenedetto, 2020). In the context of using AI as a teaching tool, cognitive theory can be applied by providing learning materials that are adapted to students' cognitive abilities (Sweller, 2020). AI can help students process information in a more effective and efficient way (Ginns & Leppink, 2019).

c. Problem-Based Learning Theory

According to problem-based learning theory, learning happens when students are presented with difficult issues that demand answers (Sari & Ardianti, 2021). Problem-based learning theory may be utilized in the context of employing AI as a teaching aid by offering tasks and problems that are suited to students' skills. AI can help students solve challenges by making timely suggestions and offering feedback (Vleuten & Schuwirth, 2019).

d. Project-Based Learning Theory

Project-based learning theory states that learning occurs when students are involved in projects that are challenging and require teamwork. In the context of using AI as a teaching tool, project-based learning theory can be applied by providing projects that are tailored to students' abilities. AI can assist students in completing projects by providing timely suggestions and feedback.

e. Game-Based Learning Theory

Game-based learning theory states that learning occurs when students are involved in games that are challenging and fun (Arnab & Clarke, 2017). In the context of using AI as a teaching tool, game-based learning theory can be applied by providing games that are adapted to students' abilities (Bakan & Bakan, 2018). AI can assist students in solving games by providing timely suggestions and feedback (Adipat et al., 2021).

D. Previous Studies

Artificial Intelligence (AI) has gained significant attention and recognition in the field of English language education. Researchers have conducted various studies to explore the benefits and potential of AI as a tool in teaching and learning English. Several previous studies have highlighted the advantages of using AI in English language education. For example, the application of AI technologies such as natural language processing (NLP) and machine learning (ML) enables the development of Intelligence chatbots and language learning platforms. These AI-powered tools can provide personalized language instruction, interactive practice sessions, and instant feedback, enhancing students' language acquisition process (Lund & Wang, 2023). Moreover, AI can facilitate adaptive learning experiences in English language education.

Through the analysis of learner data and performance, AI algorithms can tailor instructional materials and activities to meet individual learners' needs. This personalized approach helps students improve their language skills at their own pace, providing targeted support and addressing specific learning gaps (Zou, et al., 2020). Furthermore, AI-based language assessment tools have been developed to evaluate students' language proficiency more effectively. These tools employ advanced algorithms to analyze students' written and spoken responses, providing automated scoring and detailed feedback. This enhances the efficiency of assessment processes and enables teachers to monitor students' progress more accurately (Moussalli & Cardoso, 2020). Additionally, AI can enhance students' engagement and motivation in learning English. Interactive virtual assistants and gamified learning platforms incorporating AI technologies create immersive and

enjoyable learning environments. These platforms offer engaging activities, adaptive challenges, and real-time interaction, making language learning more interactive and enjoyable (Lussier et al., 2020).

The integration of AI in English language education also supports teachers in their instructional practices. AI-powered tools can assist teachers in developing customized lesson plans, generating content, and providing real-time support during classroom sessions. This helps teachers save time, promotes innovative teaching approaches, and enables them to focus on individualized instruction and student support (Garzón et al., 2020). In conclusion, the previous research on AI in English language education highlights the numerous benefits and potentials of AI as a teaching tool. AI facilitates personalized and adaptive learning experiences, improves language assessment processes, enhances student engagement, and supports teachers in their instructional practices. By leveraging AI technologies, educators can create more effective and engaging English language learning environments, ultimately promoting students' language proficiency and success in the field of English language education (Kong, 2020).

CHAPTER III
METHODS

This chapter discusses several research methodologies, including research design, research instruments, data collection methods, and data analysis. The topic of research methodologies is covered in detail in this chapter.

A. Research Design

This study used a qualitative approach with a systematic literature review design. The data is obtained in the form of words and pictures to understand and interpret social phenomena (Maxwell, 2012; Lambert & Lambert, 2012; Creswell & Poth, 2016). A systematic literature review is a research design that involves searching, evaluating, and synthesizing studies from various previous and published research results on a variety of specific topics (Kitchenham et al., 2009; Xiao & Watson, 2019). This research is one method that comprehensively examines and reviews existing research literature on a topic.

In the systematic literature review method, research will be carried out by starting to define clear research questions and identifying relevant search terms. After this has been done, then a comprehensive literature search will be carried out using databases, search engines, or other sources that can help find studies that match the research question. After that, the researcher will evaluate the quality and relevance of the studies found. If appropriate, the next step is to use the literature obtained to synthesize conclusions about the topic.

Research with this method can be an effective way to synthesize and interpret complex data and identify gaps in the existing research literature (Petticrew, M., & Roberts, H. 2006). In addition, the systematic literature review research method can also provide a complex and detailed understanding of a topic and will be useful for providing information about a particular field. Furthermore, it can be seen that below is an overview of the SLR research process.

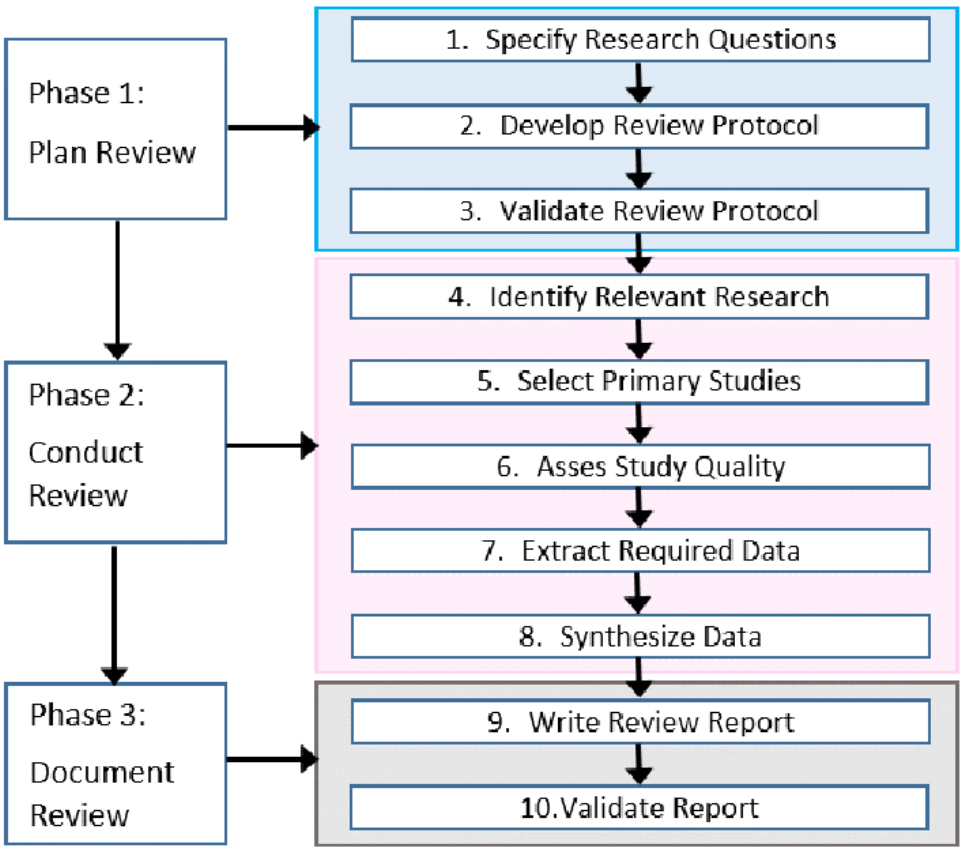

Figure 1 The Process of Systematic Literature Review

Based on the image above, it can be seen that the SLR research can be conducted through three stages: plan review, commit to user review, and document review. This process is carried out according to the guidelines for Systematic Literature Review (SLR) prepared by Kitchenham and Charters (2007). Then, this research used various journals and articles using keywords to identify relevant research that answers the research questions. Therefore, the first phase is important in SLR research so that the required documents are to the research objectives. The first important process carried out in this research is as follows.

1. Research questions and conceptual framework

In formulating research questions, consideration was given to the requirements of the chosen topic. The following inquiries will serve as the bedrock for carrying out the evaluation. The PICOC framework was utilized in the development of the research question. Population and their problem, intervention or issue, comparative intervention, outcomes or themes, and context

are the components that comprise the acronym PICOC (Booth et al., 2016). As a result, this framework delineates the various components of the research question and the scope of the investigation (Pollock & Berge, 2018, p. 142). By translating the research question into its corresponding search concepts, which are outlined below, this method of formulating the research question facilitates the identification of the most significant keywords.

a. **P**opulation: The distinct assemblage of individuals or entities under investigation.
b. **I**ntervention: The particular exposure or intervention under investigation.
c. **C**omparison: The applicable reference group for comparison.
d. **O**utcomes: The anticipated or quantified results of the intervention.
e. **C**ontext: The particular environment or context in which the research is conducted.

This comprehensive framework ensures that all important aspects of the research are considered, leading to well-defined and focused research questions. Therefore, the research questions found in this study are presented below and guided by the PICOC concept.

RQ1: What kinds of AI forms are used in EFL classes across different levels of Education?

Population: Educators and students involved in EFL (English as a Foreign Language) classes across different levels of education.

Intervention/Issue: The various forms of AI used in EFL classes. This could include specific AI applications, tools, or technologies employed in the teaching and learning of English**.**

Comparison: looking at the variations in AI usage in EFL classes across different educational levels. This could be primary, secondary, and tertiary education levels.

Outcome: Identify the effectiveness, challenges, and benefits of using different AI forms in EFL classes. Outcomes could also include student performance, engagement, and educator experiences.

Context: The taking place of study. Specify the educational institutions, regions, or countries where conducting the research. The context is crucial for understanding the generalizability of the findings.

RQ2: How do teachers use AI in EFL classes across different levels of Education?

Population: It would be teachers involved in English as a Foreign Language (EFL) instruction. Are there specific characteristics or demographics you want to focus on, such as experience level, age group, or geographic location

Intervention: In this case, it's the use of AI in EFL classes by teachers. Specific AI tools or technologies. For example, AI-driven language learning apps, chatbots, or automated assessment systems.

Comparison: For instance, you might compare the use of AI in EFL classes across different levels of education, such as primary, secondary, and tertiary.

Outcome: This could include the effectiveness of AI in enhancing language learning, the impact on student engagement, or any changes in teaching methodologies.

Context: Consider the different levels of education, and if any specific cultural or institutional factors might influence the use of AI in EFL instruction.

RQ3: What are the benefits and challenges of incorporating Artificial Intelligence (AI) in EFL classes at different levels of Education?

Population: In this case, it would be educators, students, and administrators involved in English as a Foreign Language (EFL) classes at different levels of education.

Intervention: In this case, it's the incorporation of Artificial Intelligence (AI) in EFL classes.

Comparison: it might involve comparing traditional EFL classes without AI integration to those with AI integration.

Outcome: This could include benefits such as improved language learning, and enhanced engagement, and challenges like potential resistance from educators or technical issues.

Context: Specify the different levels of education, as this could influence how AI is implemented and received in EFL classes.

RQ4: What are the teachers' and students' perceptions on the implementation of Artificial intelligence (AI) in EFL Education?

Population: Teachers and students in EFL (English as a Foreign Language) education.

Interest/Issue: The implementation of Artificial Intelligence (AI) in EFL education.

Context: The educational environment where EFL is taught, considering factors such as the level of education (e.g., primary, secondary, tertiary), location, and resources available.

Outcomes: Perceptions of teachers and students regarding the implementation of AI in EFL education. This can include attitudes, opinions, challenges faced, and potential benefits observed.

Comparison: If applicable, you might want to compare the perceptions of teachers and students in different educational levels, regions, or with varying degrees of exposure to AI in education.

2. Construct of the selection criteria

This research employed specific criteria for selecting the sources utilized. These criteria were designed to ensure the relevance, reliability, and quality of the information included. Below is a table outlining the criteria applied in the source selection process, which guided the exclusion and inclusion of sources in this study.

Inclusion Criteria	**Exclusion Criteria**
Published 2018 – October 2023	Published before 2018
Journal in English language	Not in English
English Education	Not in English education
Empirical, primary research	Not in primary research (e.g., review)
Indexed in the reputable journal	Not a journal article
Journal about Artificial Intelligence in EFL	Not artificial intelligence in EFL

Table 1 The criteria for source selection

3. Developing a search strategy

The development of a search strategy should include identifying key phrases and concepts related to the research topic. This provides the basis for an extensive literature review on the use of AI as a means of teaching and learning English as a Foreign Language. The following are several ways you can find suitable sources for research material:

a) Identify the main concepts
   - ❖ Artificial Intelligence
   - ❖ Teaching and Learning
   - ❖ English as a Foreign Language (EFL)

b) Generate synonyms and related terms for each concept
   - ❖ Artificial Intelligence: AI, machine learning, natural language processing
   - ❖ Teaching and Learning: education, instructional methods, pedagogy
   - ❖ English as a Foreign Language: EFL, ESL (English as a Second Language), language acquisition

c) Combine terms using Boolean operators (AND, OR)
   - ❖ (Artificial Intelligence OR AI) AND (Teaching AND Learning) AND (English as a Foreign Language OR EFL)

d) Include specific terms related to the tool aspect
   - ❖ (Artificial Intelligence OR AI) AND (Teaching AND Learning) AND (English as a Foreign Language OR EFL) AND (tool OR technology OR application)

e) Consider including terms related to systematic literature reviews
   - ❖ Systematic literature review, literature synthesis, meta-analysis

f) Add variations or truncations of terms
   - ❖ For example, teach* to capture teach, teacher, teaching, etc.

4. Coding studies

Data coding systematically breaks down data into smaller analytical units by creating categories and concepts based on the data itself. This process involves creating variable elements that capture the core aspects of research articles, such as quality and relevance variables (Ken et al., 2020). In this study, these quality

and relevance variables include objectives, research methods, samples, and results.

5. Assessing the quality of the study

Assessing the quality of a systematic literature review involves considering several key aspects. Here are some criteria that were used to evaluate the study.

a) Research Question and Objectives

- Is the research question clearly defined?
- Are the objectives of the literature review well-stated and aligned with the research question?

b) Inclusion and Exclusion Criteria

- Are the criteria for including or excluding studies well-defined?
- Is the rationale for including or excluding studies clear and justified?

c) Search Strategy

- Is the search strategy comprehensive and systematic?
- Are the databases and sources used appropriate for the scope of the review?

d) Data Synthesis and Presentation

- Is the synthesis of findings systematic and transparent?
- Are the results presented in a clear and organized manner?

e) Conclusion and Implications

- Do the conclusions drawn from the literature review align with the findings?
- Are the implications for teaching and learning in EFL discussed?

f) Relevance

- Are the included studies recent and relevant to the current state of AI in EFL education?

g) Citations and References

- Are the citations and references accurate and consistent?
- Is there a sufficient number of relevant and high-quality references?

6. Synthesizing results of studies

Synthesis is a stage in the systematic review process where extracted data (findings of individual studies) are combined and evaluated. The synthesis part of a systematic review will determine the outcomes of the review.

B. Research Instrument

The research instrument is the tool chosen by the researcher to collect data (Xu & Storr, 2012). In qualitative research, data collection research is carried out using the main instrument, namely researchers (Ary et al., 2018). In addition, another requirement for conducting research using the systematic literature review method is the integration of tools to obtain data from various or specific sources to obtain systematic data. The tools used can assist researchers in finding the required literature, getting the desired information from the literature, connecting literature, also analyzing and building conclusions from data (Marshall & Brereton, 2013). In this study, researchers used Publish or Perish (PoP) to search the literature and obtain the required information related to English Language Learning and AI topics from Google Scholar database and Crossref. In addition, researchers also used the Connected paper website, or go directly to web pages such as Schimago. Then, the researcher used Microsoft Excel to collect the literature obtained and make it more structured, and then start selecting the most appropriate literature. The researcher used a PRISMA chart to visualize these steps.

C. Data Collection Method

The data that is needed in this research is all literature related to English Language Learning using AI. The topics will cover all things English, such as in the context of skills, teaching, and learning. Data sources came from journals related to the topic. The researcher used documentation techniques for data collection in research because the research design is a literature review so various information needed in research can be fulfilled only by using documentation techniques.

In a systematic literature review study on English language learning using AI in the context of English as a Foreign Language (EFL), specific keywords and inclusion criteria have been established to guide the selection of relevant study results. Criteria were established to ensure that the systematic identification of literature would be consistent with research objectives and maintain the integrity of the review process. Meanwhile, the keywords that will be used to collect data

are language learning, EFL (English as a Foreign Language), and Artificial Intelligence (AI). The specific criteria for this systematic literature review were as follows:

1. Language: Only studies published in English will be considered to facilitate comprehension and analysis.
2. Publication Type: Peer-reviewed articles from reputable journals, conference proceedings, and academic books will be included to ensure the reliability and validity of the findings.
3. Research Focus: The main study selected should examine the use of AI in the context of EFL education.
4. Population: The target population should consist of EFL learners of different age groups and educational levels, including primary, secondary, and tertiary students.
5. Year: Only studies researching the use of AI in learning English as a foreign language within 2019 to 2023 will be included.
6. Outcome Measures: Studies that measure the use of AI in EFL learning, the students involved, the type of AI used, or other relevant outcomes will be considered.

To ensure a thorough and methodical examination of the literature, the researcher has strictly followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) recommendations. The PRISMA framework, which has been in use for some time, has been purposefully developed to guarantee the integrity and transparency of methodological rigor throughout the systematic review process **(Hijriyah et al., 2023)**. PRISMA has been instrumental in providing guidance for all phases of this review, commencing with the preliminary literature search and concluding with the rigorous filtration of pertinent journals.

D. Data Analysis

Data analysis in qualitative research is divided into three stages, namely data codification, data presentation, and conclusion (Miles et al., 2014). Data

codification is the data coding stage, namely the researcher gives the name of the research results. After that, the process of presenting the data is carried out. Researchers try to present research findings in the form of grouping or categorization. The last process is concluding the data findings. The three processes are repeated to obtain a maximum result (Pati & Lorusso 2018). These steps are described in detail as follows.

a) Data Extraction

Essential data and findings were collected from the final set of studies that met the eligibility criteria using a consistent extraction form. This method ensured that important details were captured uniformly, facilitating organized analysis and synthesis. The data extraction focused on aspects pertinent to the planned thematic and descriptive analysis techniques for the review.

b) Thematic Analysis

The qualitative thematic analysis was applied to the extracted data to uncover key themes related to the research questions across the selected studies. Emerging topics were categorized and grouped into coherent themes and concepts, which were then systematically analyzed and compared. This approach provided detailed insights into patterns, relationships, and variations within the literature.

c) Descriptive Analysis

A descriptive analysis summarized trends, publication periods, research methods, and sample characteristics in the reviewed studies. This overview, along with thematic findings, clarified how the literature addressed the review’s focus (Zawacki-Richter et al., 2020).